Volume I. *March, 1893.* *Whole*
Number 3. *Number 3.*

THE SCHOOL REVIEW

A JOURNAL OF SECONDARY EDUCATION

THE READJUSTMENT OF THE SCHOOL CURRICULUM.

One of the most important subjects of discussion in the educational world at present is the school curriculum. It is strongly urged that there is great waste somewhere in our educational work. What is done in the college and secondary school seems to take more time than this utilitarian age can afford for the results obtained; and if there is to be a place in the scheme of education for those studies which count specially for culture, some method of economizing time must be found. The colleges put the responsibility for this economy upon the secondary schools; while the secondary schools, feeling that they are already loaded with work, charge the waste to the inefficiency of primary instruction. It is probable that the blame can be distributed all along the line, and the present agitation for a readjustment of the school curriculum will no doubt avail to improve the character of all our educational work. Though the discussion thus far has been sometimes acrimonious and sometimes unreasonable, and those who have the least acquaintance with the real conditions under which the work is done have been the loudest in affirming what our schools can be expected to accomplish, yet the widespread and vigorous criticism has caused educators to study all sides of the question with such care that we may reasonably look for a programme which, though it may not be modified as much as many ardent reformers desire, will be of a character that can be fairly defended.

There is some injustice in the indiscriminate charge of waste made against our primary and secondary schools by those who do not understand the limitations under which they work, or who

fail to appreciate the value of the time element in the lives of ordinary children. These schools are mostly public schools, and they have the characteristics of the American life which created and supports them. There is a certain amount of waste in the educational life of the average pupil against which all grades of schools in common have to contend. In spite of the greater maturity of mind of the college student, it is a fair question whether pupils do not waste more time in college than they do in the secondary school. Probably the best rejoinder to President Eliot's famous attack on the grammar schools would be a careful statement of the work which a student is actually compelled to do in order to get the degree of bachelor of arts at Harvard College. As educators, we are all apt to overestimate the difficulty and importance of our own work and to underestimate the work of others. I have never known a teacher in a public school who felt thoroughly assured that the work of the grade below was properly done. We should remember that there is a certain amount of imperfection in our school work which cannot be justly charged anywhere, but which belongs to the general weakness of human nature.

The most important subject of discussion at present seems to be the grammar school curriculum. A few years ago college faculties were finding much fault with the character of the work done in the secondary schools; they claimed that good work could not be done in the colleges because pupils came to them so poorly prepared. The result was, in the first place, to raise the grade of the work done in the secondary schools, and then, to arouse preparatory instructors to defend their work as the best that they could accomplish under the circumstances. It has come to be understood that the better preparatory schools are doing about all the work that can reasonably be expected of them, though whether this work is most wisely chosen and most economically done is certainly still an open and an important question. The burden of criticism, however, has been shifted to the grammar school.

The grammar school is a natural product of American conditions; it has not been imitated from foreign models. Even in details, it has borrowed little from the schools of England, France, or Germany. It is, therefore, the most firmly fixed of any part of our educational system; and special care should be taken lest

it become stereotyped. That there is a call for a reform and development of the grammar school curriculum, every thoughtful educator will allow. The high school and the college have received an undue share of attention and have attained proportionately a better development. The enriching, if not the shortening, of the grammar school course is our most important educational question. It is evident that changes in the curriculum of the grammar schools, to be readily accomplished and widely adopted, must aim at a natural development and not at an overthrow of existing arrangements. It is easy to make out an ideal programme only to find that it is opposed to the strongest convictions of another set of men, and that its realization is impossible under existing conditions. There are arrangements which it is inexpedient to attempt because the labor necessary to secure them is out of proportion to their value.

The problem of the grammar school is one of the most difficult in the whole range of education because the elements which enter into it are so many. The grammar school is a public school and is supported by taxation ; it must, therefore, be in touch with the community ; its work must commend itself to the majority of its intelligent constituents. It has to be adapted to a wide variety of dispositions, characters, and mental constitutions—a range wider than that to be found in the high school or the college. It has to regard the great variety of circumstances in life for which its instruction must be adapted. It has to keep in mind the fact that the majority of its pupils will drop out of school even before its course is completed, and that its work must do the best possible for them under the circumstances. It has to have special regard for the pedagogical value of the subjects which it teaches. Its period is so short, and it furnishes the entire education of so many of its pupils, that it cannot afford to make mistakes here ; while the amount of real knowledge of the comparative disciplinary and culture value of different studies which is possessed by educators is surprisingly small. There are many opinions as to what the results of teaching certain subjects ought to be, and there is very little dispassionately gathered knowledge as to what the results of teaching such subjects actually are.

A good illustration of how easy it is for persons who are not familiar with the work of our grammar schools to overestimate the work which can be done in them is shown by the changes re-

cently recommended by the Association of Officers of the Colleges of New England. There is much to be said in favor of each of the changes proposed. But the attempt to carry out all of them at the expense of arithmetic, English grammar, and geography, as the association recommends, would practically result in throwing those studies out of the curriculum. It would not be difficult to predict the fate of a reformer who graduated pupils from the grammar school who were not reasonably well posted in arithmetic, who had so little knowledge of English that they could not explain the structure of an ordinary sentence, or who knew practically nothing of the world in which they live.

The grammar school course is being pulled in two directions. One class of reformers wish to enrich it with subjects which they conceive have a practical bearing, such as drawing, manual training, book-keeping, history, civics, and literature; while another class wish especially to shorten the time necessary to complete the college course, and would therefore add Latin, French or German, algebra, and geometry. It would not be difficult to enrich the grammar school course with any or all the subjects proposed by lengthening the time devoted to it. But we do not want to lengthen the grammar school course; it is too long already. It will be better to postpone as many subjects as possible to the high school, where they can be taught under more favorable circumstances. The subject which marks the completion of the grammar school course is arithmetic. Under present conditions, the problem is, What subjects can be taught satisfactorily before the pupil finishes arithmetic?

A great deal of time is devoted in our schools to teaching arithmetic, probably more than is really needed. Improved methods of instruction and a wise excision of things which it is not necessary to teach, at least at this stage of the pupil's progress, will save time for other important subjects. We should remember, however, that it was a sound pedagogical instinct that gave arithmetic the place of honor in the grammar school. Arithmetic is the substantial drill subject of the common school course. It may have taken up too much time, but the time has not been wasted. The pupil who has studied advanced arithmetic has been obliged to do good solid mental labor; he has been compelled to reason to the full extent of his ability; he has gained some substantial mental discipline. Above all he has

been compelled to reason about concrete facts, about things with which he will be more or less concerned in his future life. Although the problems of arithmetic are not always practical in the sense of being like those which the pupil will have to solve in his work in life, they have a practical side in that they accustom him to dealing with the same kinds of quantities under circumstances bearing some resemblance to what he may expect to meet in the future. This practical character of the arithmetic work appeals to the average boy and to the average parent. We may regret that pupils who went farther in the course wasted some time over arithmetic, but we ought not to forget that a vast number of boys have been kept in school because of not having mastered arithmetic thoroughly.

We may expect to save some time from arithmetic in our revised curriculum; but zealous reformers have overestimated the amount of this saving. No arrangement of the work can make arithmetic a very easy study for the average child; and it is well for the child's education that such is the case. While it is proposed to put into the curriculum a variety of subjects in which the teacher is to do much of the pupil's labor—subjects which are to be so carefully prepared beforehand by the teacher that the child can appropriate them with little mental effort,—it is refreshing to know that there is one subject which he must master for himself slowly, sometimes painfully, and always with much labor. If arithmetic stands in the way of drawing or music, of German or Latin, of book-keeping or civics, let us be thankful that it is an obstacle which will develop the sound mental muscle that is needed for the work further on.

Many college instructors have urged that a pupil in the grammar school should commence French, or German, or Latin, or preferably two of them, at the age of ten or soon after. No reform has been more vigorously advocated than this, and there is none which it would be more difficult to bring about. It would be opposed by a deep and wide-spread popular prejudice,—a prejudice springing partly from ignorance, partly from a feeling of patriotism, and partly from opposition to the increased expense. There is also a strong pedagogical argument against the plan. It is of advantage to pupils who propose to devote much time to language study to begin it as early as possible. But for pupils who will leave school during, or at the end of, the grammar

school course, the study of a foreign language is certainly an undesirable waste of time. The French or German taught in the grammar school will be only a smattering, taught largely by conversational methods, yielding little mental discipline, and of no practical value to the pupil who will not pursue those languages further. A little elementary study of a foreign language by young children will not be of material help to them in learning how to use their own language well. It would be far better to devote the time to the systematic study of English. The poorly mastered French or German will soon drop out of their lives, while proper English study will be fruitful in every mental life capable of bearing any fruit at all. The reasons which have availed to give the modern languages so important a place in European schools have much less weight here. We are but slightly affected by the commercial and social influences which are very powerful with them. The modern languages are a much more practical subject for the European than for the American, and it is their practical value that has crowded them into the lower grades of the European schools.

The class of reformers who have turned to a comparison with foreign schools for proof of a great waste of time in the American grammar school course have not reasoned carefully. Their reasoning is largely based upon the number of hours devoted to different subjects in the school curriculum, and upon the fact that more subjects are there commenced in the lower grades. But in foreign schools the teacher works with the pupil to an extent that is not usual in this country, and the comparison of the number of hours devoted to a subject must be made with caution. The real question is, whether at the end of the eighth or ninth grade the well taught American boy is inferior to his foreign competitor in self-reliance, in power to attack work of an entirely different character from what he has been doing, and in general flexibility of mind. The just comparison is between the characters produced by the two methods of training; and upon this subject we have surprisingly little information.

Those branches of natural science which specially cultivate the powers of observation have been unduly neglected in the grammar schools. It would seem that quite an amount of natural science could be added to the curriculum without greatly increasing the work of the pupil, its freshness making it a rest to him

from his other labors. One great reason why elementary science has been neglected in the lower grades is because it is not a good subject for examination. A child cannot make a good showing in an examination set by a third party without having the subject thoroughly drilled into his memory. Superintendents and school committees who wanted to test the work of their teachers at every turn, who must have some palpable results for all the labor of the school room, found that there was no way of testing a slightly increased power of observation, and that their examinations in natural science resulted in making it a purely cram subject. With better teachers, we shall be able to trust some portion of the work in their hands without expecting them to make a show of it on examination.

What pupils who are to go no further than the grammar school most need to know is a question which it is not safe to answer dogmatically. It is easy to make out a list of subjects which suit well a preconceived theory, and which can be defended by good reasoning from assumed premises. Herbert Spencer's reasoning as to what knowledge is of most worth seems to the ordinary reader to be very good logic. The strongest argument against the scheme of education which he recommends is the fact that when tried it is difficult to get as good results from it as from the system which he strongly condemns. Still, though it is not possible to determine at present what would constitute the most desirable grammar school course, we can see what is its most natural and probable line of development.

Unquestionably the greatest improvement in the grammar school curriculum can be made in the department of English. For the child whose education is to be completed in the grammar school, the subject is of prime importance. Because the English language has few inflections, it has been erroneously argued that it is easy to master. Not only are its pronunciation and orthography more difficult for natives than are those of any other cultivated language, but a good English expression in speech and writing is very hard for most persons to acquire. The length of time required to attain any satisfactory results in English has been underestimated by those who have not had considerable experience in teaching the subject. There are also so many disintegrating influences at work upon our language, that there is special need for our schools to uphold the standard of sound

English speech. A good beginning can be made in the study of literature. While the child is learning to read he can be brought in contact with good literature and have his taste cultivated at the same time that he is enlarging his vocabulary. When he has mastered the mechanical part of learning to read, the main effort of the school should be to enlarge his field of mental vision. The vast number of pupils who go out directly from our grammar schools into life need more than anything else some knowledge of and taste for what is best in literature. This will be a multiplying influence for good through all their future lives, and the school cannot afford to let any mere information subject stand in the way of it.

It is required by law in most states that physiology and hygiene shall be taught in the grammar schools; the reviving spirit of Americanism has demanded a place for American history and for civics; while drawing and music have made good a claim for greater recognition. If all these subjects are reasonably well taught in the grammar school, the course would seem to be pretty well enriched without the addition of a foreign language. Still, it would be well to have the experiment of adding one or two foreign languages to the course tried in American schools and under American conditions; and it is fortunate that some schools which are favorably situated for it are willing to make the trial. In the meantime, the great majority, realizing that the grammar school is the only training school of the great mass of American citizens, will go on developing a curriculum suited to the more pressing demands of American life.

One point, which reformers have often overlooked, must not be forgotten in this discussion. We may give young children by skillful teaching some more knowledge than they now get; we may quicken their powers of perception, and give them a greater power of expression; but we cannot in the same ratio increase their power of reasoning and of independent thought. Nature will not hurry the child's physical development for us; and, in the same way, she will not let him be brought to intellectual manhood before his time. A wise arrangement of the school curriculum, therefore, will regard not only the things which we most desire the child to learn, but also the work which is most in accordance with his present mental development. With the great majority of children, we shall never be able to do all that we think we ought to do in the grammar school.

If we do not come in the course of a few years to some understanding of what constitutes a good high school course, it will be because we cannot interpret the teachings of experience. Almost every study and every method of instruction is on trial somewhere. The American high school has much greater freedom of movement than the grammar school, and it has to a large extent availed itself of this freedom. When, however, we are assured by those who have tried one system that the results are in the highest degree satisfactory, and by those who, strongly disbelieving in this system, have tried one very different that their own results are almost ideal, we may reasonably conclude that the lessons of educational experience are very hard to read, or else that there is no great difference in methods and studies in secondary education. Men whose feelings are strongly enlisted in favor of a particular system will be slow to see that it is not entirely satisfactory; while how to compare fairly the results of different methods is one of the most difficult problems of education. So much depends upon the individual himself that, under any system, pupils will grow up to be men and women who will play their parts in life very much according to their abilities. Stimulus and example count for so much, also, that it is better to have a poor course of study with the living force of a great teacher behind it, than a faultless curriculum with mediocre instruction.

In the present condition of American education, there can be no great harm, indeed, there may be considerable advantage, in having quite a variation in the high school courses designed to fit pupils directly for life. But the practical advantages of having a uniformity in the requirements for admission to college are very great. Almost every college has some peculiarities in its requirements; and when a school has to prepare pupils for several colleges, as most schools do, it is almost sure to give them a poorer preparation than if they were going to a single institution. The advantages which can be gained by any college from insisting upon any special point in its entrance requirements are so small that it can well afford to sacrifice them for the greater gain to be obtained from a uniform course.

The classical course in most secondary schools is modeled after the general requirements for admission to college. It is remarkable that colleges do not have a course whose requirements for admission are the subjects taught in secondary schools in courses which are not classical. Colleges which desire a large number

of students bid for them with special or technical courses, or with courses whose requirements for admission are not very substantial. Colleges would largely increase their number of students, and do real service to the cause of education, if they offered a course of study such that the requirements for admission would be the subjects ordinarily taken by students in secondary schools who have no definite intention of pursuing their studies further. A large number of pupils in the high school wake up to the fact that a college education would be a good thing for them; but they find no course adapted to the work which they have been doing, and the eager American desire to lose no time in life's race prevents them from turning back in the work of preparation. A better articulation between the high school and the college in courses of study not classical is greatly needed; and a well considered effort to bring about this articulation would materially help in solving some of the problems of secondary education.

In all our discussion of the readjustment of the school curriculum, it is well to remember that society is being constantly modified, that we are living in a period of rapid and often unforeseen changes, and that, as education is to fit men to live the life of their time, all arrangements must be more or less provisional. If we are seeking for an ideal curriculum, we shall fail, as the wisest men in all the ages past have failed. A healthy discontent with our present circumstances and work is wise, but it is also wise not to be too discontented. No practical system of education produces ideal results, and it is very easy to criticise present work from an ideal standpoint. The reformer in education always has the advantage. The actual results produced by present arrangements are not as good as they might be; and, as the substitutes proposed have not been subjected to the crucial test of actual practice with the weak and stubborn minds of children, it is easy to predict that under the new system there will be no friction, and that the calculated results are sure to be obtained. This is a time of progress and of great pedagogical activity; but we must not, after all, expect too much of it. Any arrangement of our work will not greatly change the mind and character of the child, which is our permanent factor of resistance. The path of the schoolmaster in this generation and in the next is sure to be set with thorns.

Roland S. Keyser.
Middleburg Academy and Union Free School.

BIOLOGY IN SECONDARY SCHOOLS.

It is a significant and hopeful fact that thought was never more active than now in reference to all matters pertaining to education. It recognizes that old methods, suitable as they may have been to the times of their introduction, are not necessarily always applicable. We have learned that there is such a law as adaptation, and that the spirit of to-day cannot find its full expression in the forms of yesterday. In church and state this law is at work, and the great problem before educators is to adapt their schemes to rapidly changing conditions. The power of prejudice, "the power of what has been over the frail form of what might be," is nowhere more prevalent than in existing schemes of education, and it is hard to banish all predisposition and face the problem with a judicial mind. One of the most vigorous attempts to get at the real issues in secondary education is to be found in the work of the nine conferences during holiday week, whose separate conclusions are yet to be brought together into a consistent whole. Whether the careful work of these conferences will have any immediate general effect upon secondary education is yet to be seen; but it will at least prominently open a very fruitful subject for discussion. It is a subject also which vitally concerns colleges, as it involves discussion concerning their entrance requirements.

In responding to the request to discuss briefly the questions presented to the conference on Biology, I recognize at the outset that the human mind, like the human body, has great powers of endurance. Most of us daily violate one or more well-established hygienic laws, and yet the body seems to retain and develop sufficient vigor for its work. For generations developing minds have been subject to the most diverse theories of education, and yet each generation has had its share of mental power. However, laws for symmetrical and vigorous mental development must be formulated or no progress in education will be made.

A word should be said with reference to the subjects referred to the conference under the general head of "Natural History." This title should be entirely abandoned as synonymous with "Biology." The application of the latter term to the study of all living forms is too poorly understood in our schools to hazard

any further confusion. A worse evil in the use of terms is to group under "Natural History" or "Biology" the subjects "Botany, Zoology, and Physiology" as co-ordinates, as was done in the circular of instructions to the conference. Doubtless this was a concession to the terminology of the secondary schools, but I wish to protest against such a misapplication of the term "Physiology." That it should ever have been applied to the study of the anatomy and hygiene of the human body is strange enough, but that it should continue to be so applied is inexcusable. There is a physiology of plants and a physiology of animals, but these are departments of Botany and Zoology.

Taking the term "Physiology" as referring to the study of the human body, its place in any scheme of secondary education is so entirely different in purpose from that of Botany or Zoology that it cannot be considered in the same connection. It is chiefly used to give a certain amount of useful information rather than to study the human animal as a zoological subject. It thus becomes an informational study rather than a disciplinary one, and is not to be considered as a part of the subject of biology in secondary schools. For this reason I refer solely to Botany and Zoology in the following consideration of the questions submitted to the conference on Natural History.

1. "*In the school course of study extending approximately from the age of six years to eighteen years—a course including the periods of both elementary and secondary instruction—at what age should the study which is the subject of the conference be first introduced?*"

My unhesitating answer is that biological study should begin with the school course. One of the most natural powers of children is that of observation, and nothing is more interesting to them than the observation of living things. Far be it from me to say that the study of Botany or Zoology means the use of a book and the memorizing of technical terms; if so, they are not fit subjects for any stage of advancement. The pupils should be made to know that Botany is not a book, but is the world of plant life all about them, and it will lose all of its terrors. The most common failure of our elementary and secondary schools is that they cause to become blunted this keen instinct for the observation of natural objects which is a notable endowment of children. "Study" and "books" become synonymous terms

with them, and their conception of knowledge is that of something to be obtained at "second hand." The study of plants and animals is one of the most effective methods of counteracting this tendency, but the effectiveness will depend upon the method of teaching. If the attempt is made to give a consecutive and complete view of the plant or animal kingdom to young children, it will be disagreeable and sterile work. If a haphazard selection of material is made, observation may be somewhat encouraged, but a grievous wrong is done in presenting facts that hold no relation to each other. Such work needs both knowledge of children and knowledge of Biology. I have been surprised to hear it urged as an objection to this early introduction of biological study that it requires more knowledge of the subject than our teachers possess. If there is a strong demand for such teaching, will not the teachers be forthcoming? Should we only teach those things that teachers "happen" to be able to teach? Demand the teaching and the teachers will prepare, and never was biological instruction easier to obtain. In some schools these elementary "nature studies" are most effectively combined with other work, such as drawing, language, etc. To observe, to sketch, to express, are all worth cultivating.

As a botanist I would like to say that next to the injustice of compelling children to regard Botany as a book, is that of leading them to think that it is a study of flowers, and that its sole purpose is to teach them how to "analyze" flowering plants. A zoologist would likely complain if his noble science were presented as the study of legs, useful and ornamental as these organs may be, or were restricted to the naming of a few birds or mammals. How many who teach Botany are laboring under the impression that Botany can be taught only while flowers are blooming? Plants are always with us, and are always fit subjects for study; and is not a moss, or a toadstool, or a seaweed as truly a plant as a buttercup? The only difference is that a buttercup is far more difficult to understand than the others, and is not so fit a subject for elementary study. It is ignorance that makes the toadstool seem difficult and the buttercup easy. Are the starfish, the seaurchin, the worm, the clam, the crayfish, the host of insects, all to be mentioned, and "invertebrate plants" ignored? From my own personal experience, and from the testimony of others, I know that children make no such distinctions and find no such difficulties, and in this they follow nature.

2. *After it is introduced, how many hours a week for how many years should be devoted to it?*

The purpose of the work furnishes the answer to the question. If it is to prevent the atrophy of the observing powers, and at least to keep them functional, the work should be reasonably continuous. In primary and grammar grades one or two exercises each week through all the years would serve to keep the eyes open. When properly conducted these exercises are as eagerly looked forward to as the recreation periods, and I have in mind certain "country schools" which have become veritable museums in their display of plants and animals, where the weekly excursion touches the very heart of Nature, and the hour of "Nature study" brings closed books and eager faces. In visiting such a school one needs not to be told that not only are the eyes kept open but fresh vigor is obtained for other work.

A word might be said as to the manner of conducting such work. In the case of small animals, such as starfish, crayfish, etc., interest is aroused by having the pupils first study them alive, watching their motions, observing all external features, etc. In the case of plants, while different forms are in cultivation and their growth watched, specimens are placed before the pupil for more careful study, such as a leaf, a toadstool, a fern, a seed, a twig, a lichen, a rockweed, etc., etc. Then they are told to sketch it, and this secures close observation, until the external appearance has fully impressed itself upon them. When more advanced, in addition to external observation, the pupil is directed to section the specimen in various ways, and discover whatever of internal structure he can. Then there is a time for reporting observations and a general comparison of results, which stimulates more searching examination and gives an opportunity to cultivate the art of expression, which must be accurate both in form and fact. These suggestions are of the most general kind, but from them the apt teacher can catch the spirit of such work.

3. *How many hours a week for how many years should be devoted to it during the last four years of the complete course; that is, during the ordinary high school period?*

I recognize the fact that the high school period is very much crowded, and that other than the biological sciences demand recognition. However, that some time should be devoted to the

study of life-forms hardly needs any argument. If this be conceded, the minimum amount of time can be easily stated as one year of daily exercises. Nothing short of this counts for much in any science, and this minimum amount of time should not be divided between the two biological sciences, but should be given entirely to one or the other. The methods and principles of the two are so nearly identical that to do both is duplicating work to a certain extent. I am taking for granted that the chief purpose of both these subjects in secondary schools is to develop power, and to come in contact with the problems of life, and not to give information about plants and animals. Anything less than a year in either subject is to be avoided since the best result, the development, comes after the alphabet and preliminary definitions are passed. It is the great fault of our secondary education, and of much college education, that subjects are dropped just when they might begin to be made effective. The choice between Botany and Zoology should be left to the training of the teacher, who in every case should be expected to do what he can best do. In case the secondary school is fortunate enough to secure the services of a teacher in each of these subjects, the choice could well be left to the pupil. It must be clearly understood that a minimum amount of time is not necessarily the optimum amount, and it would be well for any secondary school to offer the opportunity of more than one year in both Botany and Zoology. Too much emphasis cannot be placed upon the statement that the work should be conducted entirely by the laboratory method. I know that this statement is becoming a very trite one, and that as the science-teaching of the secondary schools is inevitably getting more and more into the hands of our university graduates the methods are being vastly improved, but my intimate acquaintance with the schools assures me that there is yet much to be desired, and that the same amount of energy more wisely directed could be made far more effective. I am still being repeatedly shocked at the current conception of Botany. Blank-books for "analysis" are multiplying, and demands are still being made upon the innocent pupil to prepare an herbarium, and these demands are emphasized in certain quarters in college entrance requirements. All these things are pleasant enough, and in a certain sense instructive, but they should not stand for Botany, or be considered as giving any adequate impression of the plant kingdom. Such

work is merely incidental in the science of Botany, and can only be made critical and effective among advanced students. As one who has given much of his time in the preparation of "manuals," I cannot be considered as prejudiced in speaking of the injurious effect of their exclusive use in elementary instruction.

In any effective work in Botany in the high school no books should be put into the hands of the pupil except laboratory guides or books of reference. Each place at the laboratory tables should be furnished with a compound microscope and a few ordinary reagents. A careful study of typical plants should be made, plants not selected at random, but to represent prominent groups and phases of development. The danger in such a method is that this study of types too often becomes a study of isolated and hence barren facts. The relation of any observed fact to the rest of the world must always be kept in mind, and the pupil urged to draw tentative conclusions. I have seen most excellently equipped teachers who only succeed in drenching pupils with facts, which apparently no more fit into each other than do the words of an alphabetically arranged dictionary. This evil becomes greater when the teacher who is a master of delicate manipulation leads his pupils astray into the mysteries of sectioning and stains, and teaches only the machinery of the science. But if the pupil is to get from Biology a type of training that no other study can give, he must be made to work with the subject-matter itself, and make investigations which are original from his point of view. To weave these observed facts together so as to form some sort of fabric with a pattern is the test of the real teacher, and for this reason frequent questioning and frequent lectures are very essential in all such elementary work. A common and good division of the five weekly periods is to give three of them to laboratory work, one to quizzing, and one to informal lecturing. Some laboratory teachers make the serious mistake of leaving young students too much to themselves. These students must learn to work independently, but they must learn to work effectively, and that too without wasting too much time in committing useful blunders.

4. *What topics, or parts, of the subject may reasonably be covered during the whole course?*

5. *What topics, or parts, of the subject may best be reserved for the last four years?*

These questions can better be answered together. The field of Zoology or of Botany is so enormous that one may well pause to raise the question as to what vistas of it may be most profitably revealed. To present either subject in all its departments is simply out of the question, but there seems to be a natural introduction to both. To get some general conception of the subject-matter is the first step, and the only one that the pupil of secondary schools can take. He must first take a general survey of the plant kingdom, or of the animal kingdom; not by having either pass before his eyes like a panorama, but by making the personal acquaintance of a few typical forms. To read descriptions or even to look at pictures will not make a traveler, for the subtle influence of personal experience cannot be put into description. To put it technically, this proper introductory view is to be obtained by a study of the general comparative morphology of plants or animals. In the grades below the high school this must be confined to such facts as can be obtained by keen eyes, aided it may be by the occasional use of the simplest lenses; in short, such facts as may be included under the head of gross anatomy. Nearly all of the great groups of plants and animals can be so studied. The suggestive forms to select I shall speak of presently, when more definitely describing the work that can be done in the high school; the only difference being that in the work of the latter a deeper insight is to be obtained by the use of compound microscopes.

In the solid year of high school work that view of comparative morphology is to be obtained whose facts can be included under the head of minute anatomy. Lest I should be misunderstood at this point by botanists and zoologists I am compelled to explain that function should never be separated from structure, and that, of course, any study of the structure of an organ is simply preliminary to raising the question as to its function. From my point of view, therefore, any study of comparative morphology is not only bound up with general physiology, but loses its whole point when this is lost sight of. Not all questions as to function can be answered, for Physiology is yet in its infancy, but it is none the less important that such questions be continually raised. In order to be definite, I desire to submit a suggestive course of study for such a year of work in Botany, and the principles involved can easily be applied to Zoology.

The study of a plant consists of the examination of all its es-

sential features, such as cell-structure, its mode of development, its reproduction, in short, as much of its life-history as possible. Careful examination must always be secured by careful sketching, and upon this too much stress cannot be laid. It is much more satisfactory and scientific to begin with the study of the simplest forms, not merely because they are far easier to understand, but also because this order of study will give some notion of the evolution of the plant kingdom. The many advantages of this order of study, advantages which have been seen in much experience, should outweigh any supposed advantage in beginning with the study of the most complex plants. In my own experience both methods have been tried, and in beginning with flowering plants and then afterward approaching them from the lower forms, I have invariably found that previous wrong conceptions of the higher forms had to be corrected. I thoroughly believe that no proper notion of higher groups can be obtained without previous study of the lower ones. A suggestive working list of plants is as follows, although others will do just as well, and the convenience of material must determine the selection:

1. *The simplest forms* can be represented by the green slimes, such as species of Chroöcoccus and Oscillaria, both to be found everywhere. These forms could be supplemented by others, such as Nostoc. It would not be advisable to attempt any study of Bacteria, but they should be demonstrated and their great importance indicated.

2. *The green algæ* should be studied by means of such forms as Protococcus, Cladophors, Œdogonium, Spirogyra, Vaucheria, etc. It would be a very remarkable region in which all of these forms could not be found abundantly.

3. *The brown algæ* are well represented by the common Fucus or "rockweed" and Laminaria or "kelp," which can be obtained in abundance from the seashore.

4. *The red algæ*, also to be obtained from the seashore, can be studied with such common forms as Callithamnion, Polysiphonia, Chondrus, Corallina or Grinnellia, etc. It may be objected at this point that the brown and red seaweed are not within the reach of inland schools, but the very slight trouble of providing them is hardly worth considering. They can be dried, kept indefinitely, and soaked when desired for use; or they may be preserved in jars of weak alcohol.

5. *The fungi* should be represented by such plants as Mucor, Cystopus, some common powdery mildew (such as that formed on lilac leaves), a cup fungus, a lichen, some rust (such as wheat-rust), a puff-ball, and a toadstool.

6. *The stoneworts* (Chara or Nitella) should be studied if material is convenient.

7. *The Bryophytes* would be fairly represented by the study of a single liverwort and moss.

8. *The Pteridophytes* could be studied in some ordinary fern, and any greenhouse will furnish a supply of fern prothallia. If possible, the view of the group should be enlarged by the examination of an Equisetum and Club Moss.

9. *The Gymnosperms* are well represented by the common Pinus sylvestris.

10. *The Phanerogams* should be represented by a monocotyledon (such as Trillium or Erythronium), and a dicotyledon (such as Capsella).

Such a list of forms would give the student a very intelligent notion of the plant kingdom. Of course, it would not be at all advisable to attempt the study of as many plants as have been mentioned, for thorough work must never be sacrificed to numbers; but selections of material should be made from each of the nine or ten groups given, and even a single example under each would be far more valuable than entire neglect. If it is claimed that many of these forms are entirely unfamiliar to teachers, it can only be said that under such circumstances the study of any forms could hardly be profitable.

It is very desirable, moreover, that this year of work be continuous, beginning with the fall and continuing uninterruptedly to the summer vacation. A little foresight will enable the teacher to provide all the necessary material for work during the winter.

6. *In what form and to what extent should the subject enter into college requirements for admission?*

If a year of this work is held to be a minimum requirement for secondary schools, this same amount should be included in the admission requirements for college. I am coming more and more to regard our venerated entrance requirements as demanding a "lop-sided" development, and I am compelled to say that this demand for one-sided students is greater in the East than in the West, possibly on account of the greater conservatism of the

former. I must confess that along with my great love for the classics there will intrude the conviction that a little less language and a little more laboratory science in college entrance requirements would better prepare a student for the varied activities of college work. It may be said that tremendous doses of language should be taken when memory is the dominant mental power, but I am only suggesting that the dose might be slightly reduced so as to give place to a little of other treatment. The fact of the matter is that the average student who has come to the age for entering college without any laboratory training comes with encrusted eyes. So long has he been denied the privilege of seeing for himself that he cannot see at all, and entrance into the college laboratories means a long preliminary surgical operation before he can begin to work. My only plea is that enough laboratory work be included in the admission requirements to insure that the applicant has had his eyes kept open. As to the "form" of examination I would say at once that it should not be "a written examination on a text-book." This insisting that any great subject is a book is so far from my notions of education that I cannot appreciate the necessity of the question. Examinations, as I understand them, are not to test the capacity of a man's mental stomach, but to discover the amount of permanent tissue he possesses. We seek then to discover not his memory of a book, but his working power. With this in view any entrance examination in Biology should be three-fold: (1) The submitting of laboratory note-books, to show the scope and character of the previous work; (2) a written examination on the elementary principles of the subject (not "on a text-book"); and (3) a laboratory test, to show what the applicant can do.

7. *Should the subject be treated differently for pupils who are going to college, for those who are going to a scientific school, and for those who, presumably, are going to neither?*

8. *At what stage should this differentiation begin, if any be recommended?*

The work already suggested is thought to be the proper general introduction to the study of either Botany or Zoology. It is little more than the alphabet of the subject, and is the natural beginning, whatever may be the future purpose of the student. It can be considered as merely introductory, or as complete in itself; it is certainly not only the best preliminary course but also the best

short course. It must be understood that any course in science in the secondary schools becomes a good preliminary course only when it involves laboratory training and a proper conception of the subject. If it is text-book work or laboratory work in a very restricted field, leading to an entire lack of appreciation of the spirit and range of the subject, such preparation is positively injurious. This latter kind is so very common that college instructors in science are apt to confess frankly that they would much prefer no science in the preparatory schools. Such a statement, however, is not a reflection on the subject and a confession of its unfitness for college preparation, but a reflection upon the teaching.

9. *Can any description be given of the best method of teaching this subject throughout the school course?*

10. *Can any description be given of the best mode of testing attainments in this subject at college admission examinations?*

Both of these questions have been answered in the course of the preceding discussion.

11. *For those cases in which colleges and universities permit a division of the admission examination into a preliminary and a final examination, separated by at least a year, can the best limit between the preliminary and the final examinations be approximately defined?*

If a single year of biological work is required for admission, any such division of the examination is certainly unnecessary and unwise. If, however, two years of such work are required, the examination might be divided, but with no more than one year between preliminary and final examinations. In such a case the preliminary should cover a general survey of the plant or animal kingdom, as has been outlined above, with suitable laboratory tests; and the final could well demand more special and critical work in some definite region of the subject.

It is very probable that other questions will arise as this general subject becomes more and more widely discussed, and the views of college men and school men may be expected to differ in many particulars in reference to secondary schools, one claiming superior knowledge of the subjects taught, and the other, superior knowledge of the situation. It is just these two points of view that must not longer be kept separate, and the best interests of secondary education will be conserved when they are made to harmonize.

John M. Coulter.

University of Indiana.

ON TEACHING ENGLISH.

The disheartening thing about so much of education is, that it is remedial, reformatory. We must undo before we can really begin to do; subdue a full-grown fault, thoroughly intrenched, before we put something in its stead; cast out the devils that have possession before we summon the good angels to take their place. The expenditure of energy is enormous—a pound of cure where, if it could have been administered, an ounce of prevention would have sufficed. Emerson deplores this waste in another field of labor. "Politics," he says, "is an afterwork, a poor patching. We are always a little late. The evil is done, and we begin the up-hill agitation for the repeal of that of which we ought to have prevented the enacting."

This work of correction is, as was said in the first paper, difficult to do at all, impossible to do perfectly. Truth may get well if she is run over by a locomotive, but Error does *not* die of lock-jaw if she but scratches her finger. Error is tough. It has the fabled lives of the cat. It is a Lernæan hydra; and not every teacher is the Hercules that can cut off and cauterize its eight mortal heads, and sever and bury under a heavy stone its immortal one. Yes, of course, I have heaped up the imagery, I know that; but I have not exaggerated the dreadful fact or the difficulty of dealing with it. Have I not for twenty-four years tried as wisely as I have been able, to stamp out so trivial a fault, for instance, as *wen* for *when* and *lor* for *law?* And how glad I should be to know that six out of the six hundred long and persistent fights had been victories!

The remedial work of which I am speaking is especially burdensome in the teaching of English. Without struggle with an opposing habit one may learn the multiplication table, and may repeat it ever after without numerical mistake; but he is very likely to sin against grammar one hundred and forty-four times in the repetition, and to die in his sin, too. If only we could vaccinate children against vicious English; if only in their infancy we could get good English blood into their veins and good English phosphates into their bones so that they might grow up hale and robust of speech! We have this crumb of comfort that, if we succeed with the pupils we have in charge, their children may

start out free from the disabilities that fetter the parents. But when one has reached the fifties he is not living in the next generation as once he was—we can get along with the blossoms of promise in the spring-time, but in October we crave fruit.

All this to pave my way to saying that in teaching English we must not delay or needlessly defer. The earlier we try to straighten the crooked sprout the easier the task. The work can be begun, and consequently should be begun, before the pupil reaches compositions, rhetoric, and English literature—studies to which it is so often adjourned. Grammar is a study by which English can be taught. Nay, as I am not now writing of or for secondary schools exclusively, I will say that I would precede grammar proper with such a study as Reed's *Introductory Language Work*. Without bothering him with technicalities or the visible skeleton of science so-called, such a study would lure the pupil almost insensibly into ways in which he should walk.

In teaching English I would rely upon grammar as a general upon his infantry—putting it at the front and making it do the brunt of the work. I am not now speaking of the old-time grammar taught in the old-fashioned way, where the memorizing of definitions and where parsing were the be-all and the end-all of our labor. What that ceaseless grind was for we never asked, for was it not made the end in itself? That such work was of service as a discipline we never doubted nor do we doubt now. And did we not, when turned loose into literature to find material to parse, now and then stumble upon a rare bit of prose or poetry that lingers in memory yet? But that the study thus taught had any relation to speech, could be made tributary to the art, helpful to a deft handling of the language, never dawned upon us—upon *one* of us, I know—and yet in my instruction I was not thought unfortunate. But such text-books, and such teaching as they compelled, are now on their way to the rear. In its very definition English grammar claims to be the study that teaches one how to speak and to write English properly. We are holding it to its professions and judging it by its fruit. I think it may be said that it is not found conspicuously wanting when weighed in these balances of its own choosing.

That grammar may do this work best or even do it at all, it must begin and must continue with that which is the unit of all thought and of all expression—the sentence. A thought can

hardly be said to have come to its birth so that its thinker can grasp it, certainly not so that others can see it, till it has been incorporated in the verbal body of a sentence. The thought and its verbal expression can then hardly be dissociated, vary either and you change the other. And they need not, must not, be dissociated by the grammarian. The expression is for the sake of the thought it expresses, and the value of the expression is to be mainly estimated by its service to the thought. Grammar therefore fitly begins, and all the way through is concerned, with sentences—it is aggregations of these, properly connected, that constitute the paragraph, the chapter, the book. And let me say here that the sentences arrayed on the page for the pupil to study, while always level to his apprehension, should be choice sentences—choice in matter and in manner, apples of gold in pictures of silver. Who of us adults is to this day insensible to these gems of thought, or fact, or truth, in appropriate setting, hung up long ago on the walls of his memory? What sweet and inspiring influences have streamed down from these when recalled to consciousness, and have worked their stimulating way to tongue and finger-tips when he has essayed oral or written speech!

The first sentences must be the simplest possible, containing the fewest words needed for the expression of a thought—a noun with or without an adjective and a verb. Gradually the sentences may grow more complicated as other parts of speech, or the same parts with new functions, are added. Only, these new things must come in slowly and one at a time. The pupil cannot fly at great masses and master them at once. Perfect gradation is the *conditio sine qua non* of progress. Though the noun has, let us say, nine distinct offices in the expression of thought, the first sentences must contain it in but one—that of subject. Groups of sentences showing the noun in another office, other groups exhibiting it in a third office, and so on to, and including, the ninth are to follow in their proper order. The verb in one of its functions and forms enters the first sentences, in other functions and forms it makes its way into succeeding and still succeeding groups; in its most abstruse functions as participle and as infinitive it is wisely deferred till its easier and commoner offices have been fully illustrated and learned. And so *mutatis mutandis* of the remaining parts of speech. Then those groups

of words called phrases, and lastly those more complicated groups called clauses—independent and dependent—must receive ample illustration in sentences carefully arranged, and must receive the pupil's most thoughtful attention. It is in these compound and complex sentences, with clauses compound and complex even, that expression reaches its highest stage of intricacy. Now the one thing left to be emphasized in this paragraph is, that all these sentences, beginning with the first and ending with the last, are to be carefully studied by the pupil and studied in the lessons where they stand. By parsing or analysis, by parsing and analysis, and by all other methods of study, if other there be, these sentences are to be worked upon and worked over till all the forms of the several parts of speech, till all the relations of these parts to each other in these sentences, till all the functions of these parts of speech in the development and expression of the thought shall be thoroughly understood by the pupil. And this study must be continued, too, continued in advance and continued in review, till the mutual relations of the phrases and the clauses and their varied service to the thought shall be at least approximately mastered by the pupil.

But what has been exacted of the pupil is only half of the work to be done by him—the least interesting and profitable, but yet necessary, half. "If *to do*," says the delightful Portia, "were as easy as to *know what were good to do*, chapels had been churches and poor men's cottages princes' palaces." In this paragraph I must indicate a hemisphere of labor that stretches over and exactly matches that insisted on in the paragraph above—and it is the labor hinted at in the quotation just made. The pupil must be a doer of the word and not a hearer only. To know what others have done and so what it is good to do is well, but to stop there is to fail of the main, I had almost said the only, thing for which grammar is worth studying at all. It is to bring the tree to full leafage and blossom but never to the loading of its branches with toothsome fruit. What the pupil has learned that it is good to do and has learned how to do that *he is to do*, I repeat. Every step of analysis is to be followed immediately by a corresponding step of synthesis. All this work of decomposing sentences to learn the functions and relations of their various parts is to be completed by composing sentences exhibiting these parts in these same functions and relations. No sooner has the

pupil learned anything of the office of any part of speech than he is to supplement this by building sentences embodying this knowledge and working it into his practice. Beginning with his work on the simplest sentences brought in for study, and keeping step with this work, is the work of composition—ending as the analysis ends with those intricate sentences in which simple, compound, and complex noun, adjective, and adverb clauses play so important a part.

This work of the pupil in construction will be inferior to that of the great masters quoted for him to study, but inferior in little else than in quality of thought and range of diction. And in these respects it should be inferior. Is not he a mere disciple sitting at the feet of titled Gamaliels? He is not to be pushed up to thought that is above him, and to words he cannot skilfully handle. Let his thought and his diction be his own, only let us see that his sentences mean something, and that they illustrate all the verbal forms and relations and functions he has mastered.

And more. He will have learned from the sentences he has analyzed and those he has composed, how to keep the expression fresh and forceful by the endless substitutions, contractions, and expansions that save style from monotony—substitutions, for instance, of adjectives, adverbs and nouns in the possessive, for prepositional phrases, and *vice versa*; of participles for infinitive phrases, and of infinitive phrases for participles; of direct questions and quotations for indirect, and of indirect for direct;—contractions of clauses to participles, to phrases containing participles, to infinitive phrases, to prepositional phrases with a noun for the principal word;—and expansion of these contracted forms to clauses. He will have learned from the sentences studied and those composed how his style may be enriched by the putting of his words, phrases, and clauses in their most effective places. For words and the larger elements of a sentence do their best and their most only when yoked with their proper fellows; and position in English is not fixed and rigid but fluid, though not without restriction. The great literary commanders have been those skilled not only in choosing but in marshalling their verbal hosts. Studying the words of these quoted sentences in their relation to the thought which they express, what conquests the pupil is led on to make in the meanings of words! And how much he needs these new acquisitions! What assets of his are more

beggarly in amount and in quality than his verbal? He has heard words and seen them and used them but what a feeble apprehension of them he has, and how hesitatingly they come at his bidding! And if only his hold of them were a gill-hold that they could not so slip through his intellectual fingers when he tried to handle them! How often does a teacher exclaim, I could do something with my classes if they had a larger or a more reliable working vocabulary. I know of no better way to get this than a careful study of words; not of words at rest in the columns of the dictionary, but of words in motion, in use, in the sentence. There are those who think that this is the only way to master a diction. Something of this feeling must be postulated to account for the mass of quotations—not for illustration but for definition—in Johnson, in *The Century*, in the *New English Dictionary*—Dr. Murray's—of which we hope to see one or two letters more before 1900.

Looked at as here massed, I am afraid that this parallel, this double, work may seem too difficult. But we must remember that the pupil has to meet only one difficulty of it at a time. Did not the dial silence the complaining pendulum, by assuring it that, though it might *think* of a million strokes in an instant, it would be required to *execute* but one; and that, however often it might have to swing, a moment would always be given it to swing in? Every difficulty mastered and got under foot raises the student to the level of the next difficulty. How pregnant with suggestiveness to the teacher is the Sandwich Islander's belief that the spirit of every enemy slain by him passes into the slayer! The work is not difficult, it can be done, it is done. If it were becoming to say it here, it would be said that a confident appeal might be made to a large constituency of teachers in corroboration of the statement. But the difficulties, real or imagined, are not of my making. Those of which I have been speaking are those which inhere in the writing of sentences found on every page of discourse. If the pupil is to attain to good English it is the facile making of such sentences that he must acquire. I have only been saying that I know that a large fraction of this work can be done in grammar, and have been telling how. I add that I believe that very much of it can be done so well by no other study. Still the work of grammar in teaching English must be supplemented.

In acquainting the pupil with the meanings of words, grammar has its limitations, since the words of its lesson sentences are necessarily few. The teachers of other branches are to see that the pupils understand the words used in their text-books and recitations. No special study of words can relieve pupils of that duty, but such special work as Word-Building exacts would greatly help. English words exist largely in families; and that which unites the members of each family is the root out of which they grow. The root deeply colors the meaning of all its derivatives, and determines their use in the sentence. The prefixes and suffixes combining with the roots in the several families are much the same and few in number. The meanings of these prolific roots and of their modifying affixes are easily mastered, and so these large families of derivatives lie open to easy study. The distinct force of every affix in each derivative is not always apparent, the etymological signification of the root may have almost faded out of it, or the derivative may have taken on a metaphorical meaning, still under wise guidance ending in the forming of phrases and sentences containing these derivatives properly employed, this study can be made extremely fascinating and profitable. I speak by the card.

Of Composition-Writing, as auxiliary to grammar in teaching English, I shall say little. The essential thing to insist upon is that these productions contain matter—an element of which they are usually so empty, and the lack of which is so fatal to good expression. The subject taken should be interesting to the pupil, a subject that he can handle, and one that will start him off on many lines of thought. Of the material found in memory, reached by thinking, by reading if necessary, the main thoughts are to be raised to the dignity of heads or points. No two of these should cover the same ground in whole or in part, and nothing should be raised to the rank of a head that may fitly stand under one already chosen. These points or heads, rigidly co-ordinated and subordinated and naturally arranged, form a framework, or skeleton. The pupil will be amazed to find how fruitful of thought seemingly sterile subjects become under this treatment. Often he will need to abandon the general subject as too inclusive, and select some Roman head under it. What he says will thus gain in point and edge; will be specific and more in the concrete.

Of course, the composition is to be criticized. This criticism should sweep the gamut—ranging from chirography, orthography, punctuation, up through grammar and the varied qualities of style, to the thought in itself and in its logical relations. This criticism, only indicated on the margin, the pupil should carry into effect; for it is a maxim in education never to do for one what he can do for himself. But now and then the teacher should meet his class, and with two or three compositions carefully mulled should show the pupils what the marginal corrections mean, and how the indicated work is to be done. Let him in their presence make comely the uncouth in these productions, organize the inchoate, pile the heap, give definiteness to the vague, clear the obscure, tidy the slovenly, freshen up the tame, fill in the jejune, articulate aright the disjointed and the misjointed, and attack every vulnerable point in the citadel of the thought itself. And let him commend where he can—there are oases in the sandiest of deserts; let him tarry there awhile with the class and enjoy the shade and the spring. And will he not need now and then to check the undue tendency to cultivate the quality of style called humor, the inclination now-a-days to make everything funny? Man may be the only laughing animal, but he is not an animal that only laughs.

Long strides across the boundary and into the domain of Rhetoric have been taken by the pupil who has done what has been outlined under the heads of grammar, word-building, and compositions. He has been exercised in Invention, has attained to a respectable Diction, learned much of Perspicuity, Propriety, Precision, Variety, etc., etc., and, best of all, has transmuted his knowledge into skill, having into being. Of these subjects, still further developed in rhetoric, and of rhetoric in its other departments, I cannot here speak except to say that all rhetorical work is for the sake of practical results, results cropping out and cropping up thickly in the pupil's style. Rhetoric, solely as a science, stowed away in one's head, is possibly better than a rhetorical vacuum there, but rhetoric there, forever filtering down and constantly regulative of tongue and of pen—this is the rhetoric the pupil should acquire. Rhetoric, Grammar, and all other studies that teach English are, in their last and highest intention, arts—are to teach arts, to make artists of those who study them. This must never be lost sight of. All work then in Perspicuity, Im-

agery, Energy, Elegance, etc., etc., should, after the pupil has been grounded in the purpose and the philosophy of these and in the definitions, take a form bearing directly upon practice. The pupil is to go out into the fields of literature in quest of illustrations, he is to create illustrations, he is to write essays abounding in illustrations of what he has learned under each great topic. The crude ore which he has mined he is to smelt and mint and put into circulation. In exchange—and in that and that alone—do his acquisitions receive their highest use, their justifying *raison d'être*.

In English Literature the pupil reaches the most comprehensive pursuit from which to learn English. The grammarian, the lexicographer, and the rhetorician find in it their data and their sole authority. Each goes to it for his facts and his principles. By many ways and from many sides our pupil has already entered English Literature when first he reaches the department distinctively called by that name. From what he has already studied, the pupil has learned much of that which he is to look for in literature and look at; and much respecting the value he is to attach to his findings. In literature he is to develop taste, already measurably formed, and make it critical in detecting the merits of authors, and delicate and catholic in their appreciation; he is to cultivate a feeling for the best and an instinctive preference for it—a capacity that makes reading a perpetual source of culture and delight. And more. In literature he is to nourish a taste that shall take on the form of faculty—what we mean by taste when we speak of it in Arnold or in Newman. We have in mind his command of seasonable thoughts, fit for his purpose and adequate to it. We think of his wise omission of what was unsuitable; of his apt expression—the inevitable word, the happy image, the felicitous phrase; his ordering of each sentence so that every part of it yields up the best and the most that is in it; the self-restraint he has shown and the surplusage avoided; the moderation that prevails, and the discipline that rules. Taste that shows itself in *thus doing*, as well as that which makes us appreciative of what others have done, is that to which, or toward which, literature may conduct us.

We may easily attempt too much with our pupils, and so fail of that which is reasonably attainable. I should think that, if in addition to what I have just said pupils should achieve—and

this is much,—they had learned to classify authors by their productions and place them in their periods; could point out the influence their times had upon them and their reaction upon their times; had read enough of the great representative writers to know their distinguishing characteristics of thought and of style; and through their productions had penetrated to the attainments, the culture, the traits, the character of these men and had thus *made their acquaintance*—I should think that, if their pupils had accomplished this in the secondary schools, the teachers there should be fairly content. At any rate I would not *risk this* by requiring the pupils, as Mr. Thurber of the Girls' High School in Boston says we should, to "present the historical associations connected with the site of Barclay and Perkins's brewery;" to "trace the custom of tea-drinking by the allusions to it in English literature;" to "imagine an interview between Goldsmith and Chatterton;" to "set forth the case of the disputed authorship of *The Ode to the Cuckoo;*" to "compare the 18th and 19th centuries as to their ways of viewing Alpine scenery;" to "find pictures and descriptions to illustrate *Keramos;*" to "look up foreshadowings of Wordsworth in Gray;" and to tell whether they "agree with Johnson and Macaulay as to the absurdity of Mrs. Thrale's second marriage." These questions, however vital, might safely be adjourned to a college course or to afterlife; I can even conceive that one might escape Purgatory though he died in ignorance on these points.

In all this work in literature the text-book must not come in to keep pupil and author apart—these should meet as often as possible, face to face. The wrong that we elders suffered in having thrust upon us a mass of second-hand knowledge concerning authors (Shaw's or some one else's) instead of the authors themselves, rankles in our bosoms yet.

Now, Mr. Editor, the sketchiness and insufficiency of what has been said are as obvious to me as to you, and a good deal more painful. But as one grows older he grows less sanguine of great effects from small causes. Even had the treatment been adequate to the subject treated, I should still have been skeptical of marked results. If here and there an unfaithful teacher of English shall be quickened to greater exertion by some stray suggestion of mine, I shall be more than gratified.

I cannot close without adding that the best results are not to be looked for till the teaching of English ceases to be regarded as the exclusive business of the instructor in rhetoric and literature, and comes to be made the business of every teacher. A premium should be set upon good English everywhere and in everything in the school. "Sacred to good English" should stand over every room door, and stare at the pupil from every wall. English should be in the air. Whatever else is neglected, English should not be. No work in any study should be thought well done, as it is not, till the English in which or into which it is done is above reproach. In the answer to every question, insist, if you please, that the one shall match the other as the palm and fingers of the right hand meet and mate those of the left, but do not regard the work as complete unless put into clear, simple, and idiomatic English. Bad English is everywhere to be challenged and by everybody. In some real sense it should be made dangerous to use it. To what was said before respecting good English as an attainment, as a discipline, as a test of social standing, and to what is added here concerning it as a source of endless enjoyment and of power—to all this boys and girls are not insensible. This is our anchor to windward, and keeps us from drifting into the waters of despair.

I would like to end with a warning. I would like to say that should I be so happy as at last to enter through the golden gate, and should the venerable keeper of it, some day, by accident or otherwise, summon me to "spell" him for a while at the door, it would not be wholly *what* was said in answer to my questions, but in part the *English in which* it was said, that would determine the applicant's admission. But because of the hypothetical character of the conditions the threat would be ineffectual, and I refrain from making it. If made, however, it would hardly exaggerate my sense of that for which I am pleading.

Brainerd Kellogg.

Polytechnic Institute, Brooklyn, N. Y.,
Feb. 15, 1893.

THE NATURAL SCIENCES IN ELEMENTARY EDUCATION.

In this closing decade of the XIXth century all thoughtful educators will doubtless agree that the great leading purpose of youthful education is a harmonious and all-sided development of the human capabilities; that the attainment of certain kinds of knowledge, which is the essential school means for developing the powers of the young, is useful only in so far as it coincides with the growth of power to use this knowledge in appropriate ways; that, therefore every desirable form of knowledge should be so presented as not only to insure its retention, but also to assure the exercise of the very powers it is fitted to develop,—that, in truth, acquisitions can be *vitalized* only by *method*; and finally, that a harmonious development of all the human capabilities will demand the *duly-proportioned* and *continuous* use in all classes of schools of means suited to develop efficiently in the child all these capabilities, and to enable him at the same time to sympathize intelligently with all the leading interests of his race.

The employments that may be used in schools fall into five somewhat natural groups, viz.: language, mathematics, the sciences of nature, history, and those exercises which like writing and drawing, singing and the use of tools, train the physical dexterities and react on taste. Each of these has its own special kind of truth, and its own special method of striving after it. Each rightly pursued trains the powers of the student in its own peculiar and salutary direction. Together they store the growing intelligence with knowledges which may gradually interact and combine to become *wisdom*, and to fit the mature man to grapple successfully with all the problems that life may present. Together also they correspond with the great currents of lively human interest. These then, together with those other subtle influences which shape character and in which studies rightly pursued only indirectly yet powerfully coöperate, are our school means for promoting a harmonious and all-sided development. All should be provided for by suitable representatives in every part of a well-constructed curriculum, from the lowest primary to the university where specialization properly begins.

It is no part of the purpose of this article to discuss the interesting question of the proper proportioning and arrangement of the several parts of a truly liberal education. This is a question which may well tax the powers of our wisest and most experienced school-men, as it is even now doing in Germany. What is essential to our present purpose is the idea of *unbroken continuity* in the use of every group of studies, but we must remember always that in the higher stages of advancement, the mathematics and physical dexterities, by becoming useful tools, may need less special attention.

So much has seemed necessary to be said in a general way that we may be properly oriented for the subject that we have immediately in view. For, if all groups of subjects should be represented in instruction, then the sciences of nature should not be neglected. If, for the purpose of insuring desirable intellectual habits, such instruction should be unbroken, then it becomes us to inquire, what portions of science may profitably be used in the most elementary classes, in what way these portions should be presented, and what aim should be kept steadily in view in such instruction.

But the first two of these inquiries can receive a satisfactory answer only when we have a clear idea of what the sciences of nature should contribute to the equipment of the completely developed man. Knowing this, we shall know for what the teacher should be held responsible in science-teaching. We shall have a definite purpose to attain, and shall thus be in a better position to select our means judiciously and to use them efficiently. Hence, as in all other teaching, so emphatically here, the question of *aim* to be gained must take precedence of all others; and it hardly admits of doubt that the unsatisfactory results of past science-teaching are due more largely to vague notions in this respect than to any other cause. Although animated instruction in science is pleasing to the young, its primary purpose is not merely to afford innocent pleasure. Although correct science-teaching opens wide fields of useful information, its chief purpose is not knowledge but the ability to gain knowledge, and therewith the ability and the disposition to be all one's life a learner.

Now all sciences of nature have their very foundation in correct and definite observation of the facts which nature presents. It is therefore of the very essence of science that the pupil should first

of all be taught to *observe*, to use his own senses directly upon appropriate objects and thus to increase their delicacy and power by repeated use; and moreover, to give an account of what he has in any way experienced, that the fact of observation may be assured and that its results may be embodied in language. Unembodied knowledge, like disembodied spirit, is evanescent. But when even the youngest child is thus brought into direct contact with nature, he is quick to note the infinite variety which she presents, to see that this object is similar to that and quite unlike the other. Incipient powers of comparing and judging emerge, and should be appealed to in all possible ways; for ripeness of judgment results only from repeated acts of judging. Rude and then more perfect classifications result from the grouping of the like and the separation of the unlike; and the beginning of class notions is made, which future experience shall fill with ever clearer and more definite meaning, until gradually and almost unconsciously the pupil grows to a considerable mastery of the general and abstract terms which make so large a part of the language of the more enlightened members of his race. Even those larger operations, called generalization and induction from observed facts and phenomena, should have their definite beginnings in some part of the elementary course, and especially in certain easy and natural observations of physical phenomena. The youngster whose attention has a few times been directed to the flash of a distant gun and to the report which more tardily reaches his ear, can readily be brought to infer that sound travels more slowly than light, and to apply his generalization to lightning and the resultant roll of thunder.

Thus, it is obvious that the aim which the science teacher should keep ever clearly in view is first of all to train the senses to ever-growing accuracy and completeness in observation; as accessory to this, to secure the expression and interpretation of what is observed; to neglect no opportunities however slight for the exercise of judgment; and to advance, gradually indeed, but always with definite purpose, towards the classification and generalization of results secured by direct personal observation. It will be observed that the key-note of the whole matter is *direct contact* with nature and diligent study of what she has to teach through the proper use of trained senses. Through these, important *vitalized centres*, or in Herbartian phrase, apperceiving

masses, are gradually formed to which all later acquisitions naturally gravitate, like to like. And when we consider how deeply the results of early habits of observation affect all the higher uses of the intellect, and how frequently through their lack the results of the highest intellectual and spiritual efforts are clouded by doubt or vitiated by error, we can but be surprised that so little definite attention has hitherto been given to this primal source of knowledge, and to the most effective means for its development, the elements of natural science.

The aim which we should strive to reach in elementary science-teaching being definitely determined, we come next to the consideration of the means that may be used. Here it will be found that a considerable latitude is afforded for choice, depending in part on what the locality most abundantly supplies, in part, and even more largely, on the tastes and acquirements of the teacher. In one place these circumstances may combine to dictate the study of plants, in another of insects or of other living higher animals, in another of minerals and rocks, and in still another of the objects of the sea, its pebbles, and its plant and animal life. In every place, the definite study is at hand and ought never to be neglected, of the relative position, direction, and distance of various local objects, which the Germans aptly call "knowledge of the home," as a key to the wider study of the globe on which we dwell. By the faithful and skilful use of any of these means extending over definite portions of the early school life, the powers of observing and judging may be efficiently trained, while a love for nature and the objects she presents may be inculcated which will not only foster the germs of good taste but also prove a great moral safeguard in the critical period of youth.

Of these various branches of the wide tree of science, it will probably be found that the study of plants will be the most widely available; furnishing objects everywhere attainable and interesting, affording the most abundant means for multiplied observations and easy comparisons suggestive of classification, and cherishing most directly a love for the beautiful in nature. Next in general availability to the study of plants is doubtless the observational study of minerals and rocks. Few places, even crowded cities, fail to supply abundant materials for such study to the ingenious and observant teacher; and where crystalline minerals can be obtained, they have the advantage of furnishing an

introduction through natural forms to the later study and description of geometric forms of which some city schools make use for training to habits of observation. A ground of preference of the two subjects here named over any of those involving the study of living creatures, may be found in the fact that they furnish no occasions for giving pain or uneasiness to animals, whilst they give a wide and harmless range for observation and comparison. Doubtless, at more advanced stages of the work of elementary schools, when pupils have become more considerate, and when careful training in observation and comparison has made them able to detect higher similarities amidst puzzling adaptive changes in structure, certain elementary zoological observations may with good teaching be made profitable. Yet beyond the barest elementary comparisons of the more obvious points of structure, such zoological studies may well be left to more advanced stages of progress than we are considering, and the attention of the more experienced pupils directed to the always attractive play of physical forces. In this, it need hardly be said, a great field is open for the highest skill of the teacher; for here, not only is observation to be exercised on phenomena rather than on objects; but generalization plays a larger part; with the occurrence of invariable sequences causal relations are to be traced; and amidst all the interplay of blind forces, the pupil is to be brought gradually to discern the reign of unchanging laws.

I am therefore inclined to recommend that in the elementary schools, attention should be confined to the observational study of plants, of minerals and rocks, of the local features which introduce to geography, and of the simplest and easiest phenomena of physics, with perhaps some structural study of the common animals. Where circumstances permit the study of all these, the observation of some of the more striking parts of plants, like leaves and flowers, may be begun with the youngest classes, may at some distance be followed and *alternated* with the examination of local characteristics and of minerals, and may in later stages of progress be succeeded by the elements of physics,—the elements of zoological structure occupying the latest place as demanding the greatest maturity of mind. Where but two can be used, they should be botany and physics, both of which admit of extended use without overpassing the growing powers of youth. Quite possibly in the schools of crowded cities, minerals and rocks,

succeeded by geometric forms, and then by physics, may do good service. Certainly, in at least one of the schools of Boston, the study of minerals has met with great success.

We come now to the important question, how to use the means which the various branches of natural science offer for the attainment of the end that has been proposed. And first and foremost, all useful teaching in the elements of science must be purely oral and observational, the teacher bringing the pupils into direct contact with nature and the objects that nature presents. Nothing like a text book should intrude; for such is the tendency of the human mind in school-rooms, that when text-books on such subjects enter, nature at once flies out of the window, and direct observation gives place to mere uninterested efforts of memory *about* nature. Books may indeed play a most useful part in confirming and aiding to correlate what has already been observed; but their only safe place is in grades beyond the elementary; and even there they need to be carefully watched, lest they usurp the place of both teacher and nature, and arrogate to themselves functions which do not at all belong to them. This last remark is true also of subjects other than scientific: in science it points to a source of positive danger. Hence let teachers of elementary science, in preparing their lessons, study carefully the objects they are to present, and glean useful hints from books, but let them when they enter the class-room leave all books behind.

A second suggestion which is of first-rate importance is this, that in the class-room the pupils, even the youngest, should make their own experiences, use their own senses, handle with their own fingers. To be sure at the outset they will be awkward and purblind. Practice only can make them acute and dextrous. At first they will see little save the most salient points. Questions brief and skilfully directed will guide them to still others, and interest will grow with that on which it feeds. The duty of the teacher here is to be the unobtrusive guide, the sympathetic friend, the wise suggester, while nature herself instructs. Such mere guidance is not always easy. The teacher is often tempted to *tell* the pupils what is plainly before their eyes. But don't. Wait a little, drop a suggestive question, show eager interest, and when your pupils have overcome the difficulty by their own efforts, both they and you will be repaid by their feel-

ing of growing confidence for future trials of their powers. What is told is apt to lack life and to slip soon away; what the child experiences remains. If something needs to be told,—and who can say that occasions for telling may not arise?—it should be told freely at the outset, and illustrated until the matter is brought clearly within the range of the child's experience; but it is well to consider carefully whether there is not a way in which the pupil may discover what would be told, by his own effort under proper guidance. What needs always to be borne in mind in this teaching is, that the pupils' ability to observe and judge can be developed to readiness and strength only by their own use of such powers, not by the teacher's ready use of his. One can as easily digest their food for them as train their senses and powers of comparison by any use save their own.

A third suggestion is that the child's ability to embody his sense-experiences and his efforts of judgment in appropriate language should keep even pace with his progress in these regards. When he has fully grasped some new fact, if the words of his present vocabulary will fitly express it, let him use them. If not, the essential new words should be given and written before him, and care should be taken that he uses them correctly both now and when future occasions arise. In this way alone can his ability to use with precision language, that peculiarly human instrument, keep pace with his intellectual growth. With regard to scientific terms, it may be said that, as they have been devised to express certain characters or facts with precision and brevity, it will probably be found expedient to use them frankly from the first, taking care always that the idea bring with itself the need of the word. When clear ideas are to be embodied, the young learn needful new words readily enough. The difficulty with scientific terms arises when they are presented without any fact to correspond to them. Properly introduced they will be found helpful rather than troublesome, and they will save pupils the inconvenience, in more advanced stages of progress, of changing from somewhat vague common words to terms more precise.

When pupils have learned to write and to draw with some degree of readiness, very effective means are afforded for assuring acuteness and definiteness of observation. "Writing," says Bacon, "maketh an exact man;" and when pupils attempt to delineate what they see, it will be found that vision penetrates

more deeply into the characters of objects and discerns those that are less obvious. Hence, they should be encouraged, if not required, to write about what they observe, in the form either of systematic lists of characters or of connected descriptions, and to resort to the pencil as another means of expression. Even somewhat more advanced pupils who have had no lessons in drawing show a surprising readiness in the use of the pencil when they see a useful purpose which it may subserve.

Written notes and careful drawings are an excellent preparation for the more advanced work in classifying numerous objects, to which the elementary work in botany should lead. It is obvious from what has already been said that definite and complete observation should precede every attempt at classification. Probably such work should begin by the separation of collections of objects, whether plants, minerals, or rocks, into groups based on their prominent observed characters, and the rectification of these groupings by a closer comparison of characters. When, however, the time comes for the use of manuals with analytical keys, great care will be needed that pupils first do their work of observing carefully and systematically, and advance as far in the classification as their knowledge will permit, before resorting to the manual. For example, in botany, if pupils have made a study of some member of the rose or lily family, they should thereafter be expected to need no table of analysis in the recognition of any new members of the same families. It may be remarked here that in botany the assignment of plants to their classes has the great merit of serving as a *test* of, and keeping an effectual check on, the thoroughness of our observation. A like advantage, but on the side of generalization, is presented in the case of physical science.

Finally, it will be found most serviceable in securing a healthy and enduring interest in natural history studies, and in training youth, to have their eyes and thoughts about them wherever they go, to encourage the making and arrangement of collections of natural objects. These collections may be for the school, in which case they should be so cared for as to express value ascribed to them, or they may belong to the collector. Children and youth have an instinct for collection; if they find nothing better, they gather postage-stamps or coins or even buttons: this craving may be turned to good account in the elementary study of nature; and,

if to this be added as an auxiliary, class excursions for the study of certain phases of nature, the strong social instinct will be enlisted in behalf of such study. German elementary schools, under less favorable conditions, find such excursions both feasible and instructive. Why may not also our schools?

Throughout this discussion, the competent teacher gifted with sound pedagogic sense has been assumed. A somewhat thorough previous acquaintance with the sciences of nature is of course desirable. Yet it is by no means impossible that an earnest and progressive teacher, thoroughly alive to the value of the kind of training here advocated, and disposed to do vigorous work, may fit himself by private observation and study, not only to give most useful lessons to young pupils, but also ultimately to do the highest work demanded by elementary schools. Such teachers will find some of our best summer schools very helpful. There are besides numerous elementary works to aid them by suggesting how to attack the problems that the study of nature presents. Several highly suggestive "Guides for Science Teaching," under the auspices of the Boston Society of Natural History, have recently been issued by D. C. Heath & Co. For the teacher of botany, Miss Youmans's "First and Second Books of Botany," with Gray's "Lessons," would be excellent, as also number two of the "Guides" just named. Numbers twelve and fifteen of the same "Guides" and Dana's "Manual of Mineralogy" would be very helpful in the study of minerals and rocks, to which may be added the first two chapters of Williams's "Applied Geology." For elementary physics, a recent work by Dr. Edward R. Shaw, entitled "Physics by Experiment," and the "Elements of Natural Philosophy" by Professor Cooley of Vassar would be valuable aids. In this brief list of books which would be suggestive to the teacher in preparing for his work it is not intended to give any preferred catalogue, but merely to name some of the helpful treatises that may readily be obtained. Doubtless, many others equally helpful and equally suggestive may be found. But it is important to remember that they are to be used only as helps, and by no means permitted to intrude upon the work in the elementary classroom. This work should be wholly oral and objective.

To recapitulate the positions of this article on the elementary teaching of natural science: (1) the teaching should be progressive and continue through the entire course of the elementary

schools with lessons as frequent as the relative importance of the subject demands: (2) its aim should be to assure habits of careful and definite observation, of comparison, and finally of classification and generalization: (3) the most available means are likely to be the study of plants, of local features, of minerals and rocks, and of the most interesting physical phenomena: (4) the work should be done through the direct observation of objects and phenomena, and without text-books; the pupils themselves should do the work under the wise and sympathetic guidance of the teacher, and embody its results in fitting language, oral or written, or in drawings; the work should lead ultimately to classification and easy generalizations; and throughout its course the making of collections, and field lessons and excursions will be very serviceable.

Samuel G. Williams.

Cornell University.

BOOK DEPARTMENT.

CONDUCTED BY PRINCIPAL C. H. THURBER.

Abraham Lincoln. The True Story of a Great Life. By WILLIAM H. HERNDON and JESSE W. WEIK. With an Introduction by HORACE WHITE. New York: D. Appleton & Co., 1892. 2 vols. pp. xxviii, 331; vii, 348.

The principal contributor to these volumes, Mr. Herndon, became Lincoln's law partner in 1843; and the partnership continued (without one word of "personal controversy or disagreement"—I, 252) till the assassination of the President in 1865. Mr. Herndon had, therefore, unusual facilities for observing Lincoln; and as he from the first believed in the great destiny of the man whom he also loved and revered, he became the personal depository of a great mass of invaluable *Lincolniana*. From this material he has at last undertaken to portray the man Lincoln, and to analyze his attributes and characteristics. He has set down the truth, the whole truth, and nothing but the truth;—at least as he saw the truth. The result is a biography which, if the Hibernicism may be allowed, would have delighted Lincoln himself.

Mr. Herndon's biography has the note of absolute veracity. We have new illustrations of the kindness, gentleness, justice, courage, and unflinching fidelity to principle which formed the groundwork of Lincoln's moral constitution. But, still more welcome, are the living pictures we get of Lincoln's life in his family and at his desk, on the circuit and in political campaigns. For the first time the world is here given the sad story of Lincoln's domestic life, and with the utmost impartiality. Another novelty is the portrayal of Lincoln's "inordinate ambition" (I, 191 and II, 44) and the dissipation of the popular myth, mostly of *post-bellum* growth, that he sat quietly at his legal work till the people called him to office. On the contrary, he is shown to have been "the smartest parliamentarian and cunningest log-roller." He believed in his own destiny and was always on the alert to bring it about.

Another merit of the book is that it keeps Lincoln always in sight. Of Masson's Life of Milton in six ponderous volumes, Lowell complained that it made the great poet an incident in his own biography. Readers of Nicolay and Hay's Life of Lincoln have been oppressed with the same feeling. Mr. Herndon leaves it to others to write a history of the times of Lin-

coln. He essays a portraiture of the man himself. And in the closeness with which he sticks to him, and the pertinacity with which he makes him reveal himself through his own oral and written speech, his work reminds one of Boswell's Life of Johnson. He has written a book which is destined to have a long life.

The book is invaluable for a school library. But just because it is such a literal translation from life, there are parts of it, especially the stories, which are not suitable for the young. It is preeminently a book for men and women, for teachers, not for pupils. Those who teach American history will find it as indispensable for their work as it is fresh, fascinating, and life-like in itself. There is a good deal of talk just now of teaching morals in the schools. But morality is a subject to be studied; it is a mode of life to be attained. And for the attainment of it nothing is more helpful than example. What moral help, therefore, a good teacher might draw from this book! For it was by his fidelity to principle that Lincoln triumphed over his greatest rival—Douglas—who possessed every other quality requisite for success and favor. Or, to take another example, what other words plead so powerfully the cause of Civil Service Reform as those of the great President whose noble work was always hampered by the thronging of office seekers. "This human struggle and scramble for office," he said, "for a way to live without work, will finally test the strength of our institutions" (II. 217).

J. G. Schurman.

The Beginner's Greek Book. By JOHN WILLIAMS WHITE, Ph. D., Professor of Greek in Harvard University. Boston: Ginn & Co. 1892. pp. XV, 428, 70.

Professor White's *First Lessons in Greek* has been extensively used since 1876. To those acquainted with it, the first point of interest in this new book will be to see how many changes have been made, as it may be supposed that these have been suggested by the experience of teachers. The author says—preface, page 1—"This book differs in important particulars, but not essentially in its plan, from my *First Lessons in Greek*. The two books make about equal demands upon the pupil during the first six months of his study. The increased size of the book is due mainly to the fact that it is complete in itself, and contains the text of the first eight chapters of Xenophon's Anabasis, with summaries of contents and notes, arranged as reading lessons." A question of method is then raised at the start in considering the plan of the book, and it is this. Shall the beginner be given a small book with constant reference to a standard grammar for the forms of the language and the rules for their use, and with just enough exercises to illustrate them, and then at the first possible moment be given an easy text to read; or shall he be given a book like this

which contains in itself a tolerably complete synopsis of the grammar, and a large number of exercises which not only illustrate the rules, but afford some practice in reading as well? I do not believe that an answer can be given which shall be final or universally accepted. The age of the pupil must be considered. The frequency of the lessons, and the time given to recitation are important factors in the solution of the problem. The teaching gift of the instructor is here, as elsewhere, all important.

If the latter of these two methods is to be followed, this book has many features to recommend it. Some points of general excellence are these: First, it is a complete course in itself. The pupil while using it needs to consult no other work. When he has finished it, he has had a thorough drill on forms and their uses, and he has also read a considerable portion of a Greek author. Secondly, the matter is presented in a very clear fashion, and the more difficult points are introduced gradually and with very good explanations. In this way the forms of inflection of noun, pronoun, and verb, and their common uses are developed in one hundred lessons, covering two hundred and eighty pages. The verb is developed through the different tenses of the indicative in both voices, and then in the subjunctive, optative and imperative. This part of the book is followed by nineteen lessons on syntax, and by twenty pages of paradigms of verbs, in addition to the reading lessons already noticed. Further particulars in which the book excels are these. The directions for reading given on page 34 and elsewhere. These dwell on the necessity of studying the words of a Greek sentence, to get the emphasis intended no less than to determine their grammatical relations. The habit of reading the text aloud cannot be too early formed nor too carefully cultivated. There is no other way in which a feeling for what is right and what is wrong can be obtained. Without such a feeling one can no more become master of a language than one who has not a feeling for what is truly beautiful can become an artist. A good point is made by the author again in the following direction: "In acquiring a Greek vocabulary, do not commit words to memory as separate units, but group those that show affinity in form and meaning about the root-word or stem-word." This habit of analyzing and grouping words is absolutely indispensable in the acquisition of a large vocabulary. These are merely samples of the thoughtful way in which the book has been developed, and do not by any means exhaust its excellent features.

Turning again to the preface, page 1, we read: "In order to be able to read even simple Attic prose at sight one must know the usual forms of the Greek language, its ordinary constructions, and its general vocabulary. . . . I have aimed to give only the usual forms of the language, those that will be of practical service to the pupil when he begins to read. My aim in general has been to give the minimum amount of grammar." With this aim in

view, what reason can there be for including the forms of the dual in the paradigms? To be sure the custom is universal and is followed in books far more elementary than this, and in those which profess to teach much less. But this can hardly be a justification. How do the facts of the case stand? On page eight of the book we read: "Number. Greek distinguishes three *numbers:* the *singular*, which denotes one object, the *dual*, which denotes two objects only, the *plural*, which denotes two or more." This is in lesson five, in which the first paradigms—of feminine nouns of the first declension—are given. In the next four lessons the exercises give, or call for, forms of the dual thirteen times. If in the reading of a text they occurred as often proportionately as this, there would be good reason for requiring the pupil to learn them. But if I have not overlooked any, there is a single sentence only in the first book of the Anabasis which contains a dual form, viz.: I, 1, 1, *ἐβούλετο τὼ παῖδε ἀμφοτέρω παρεῖναι.* Teachers will understand why we find the dual form used here, and the plural, *παῖδες δύο*, in the first sentence, and it was not necessary to discuss that. No explanation, however, is offered the student, of the fact that *δύο* is used constantly with the plural, *e. g.*, in the text included in the reading lessons, *πλέθρα δύο, σταθμοὺς δύο, λόχοι δύο, τείχη δύο.* Even in the exercises of the book, there seems to be no use made of the dual after lesson nine. Why not omit then all mention of it? This would save considerable space and make the labor of learning the paradigms *seem* a good deal less, if nothing more. If, however, it is to be retained, why not put it *after* the plural as is done in most scientific grammars? With the same object—to reduce the grammatical material to a minimum—the "Attic second declension" might be omitted. The vocabulary in the book gives eight words of this declension. Of these, two do not occur in the Anabasis at all, and a third, *ἵλεως*, only in connection with *θεοί.* So under the third declension *ἄστυ* has a paradigm for itself. But it does not occur in the Anabasis, nor is there any word which is inflected like it. The same is true of *γραῦς.*

Considerable space is devoted to "Word Grouping." The term is used to denote the method of "associating with the Greek words that belong together in a group the related Latin and English words." The difference between English words derived from the Greek and those which are cognate is clearly stated, and the words are distinguished by a difference in type. This part of the book is more open to criticism than any other. It does not seem to have received the careful attention bestowed upon the rest. The Greek words thrown together under one root should in a number of cases be separated, and the "grouping" of the English words is frequently wrong.

If the student is to derive benefit from this exercise, much of it must come from observing the regularity of sound-change, and so even doubtful correspondencies, if they appear to violate the

regular laws of change, ought to be omitted. A few examples will illustrate the defects of the book in this respect. On page 165 under a root "μακ, *be great, have power*," are given, among others, these words: μακ-ρός, μάκ-αρ, μῆκ-ος, μηχ-ανή, μέγ-ας, and English "make, may, might, much, more, most, many, main, maid." Now there are grouped together here representatives of at least five different roots. First: μακρός with μῆκος is not related to any of the others given and to none of the English words. (English *meager* may be a cognate). Second: not related to √μακ, but forming a group by themselves are μέγας, *much, more, most.* Third: Another group is made up of μηχανή, *may, might, main.* Fourth: English *many* and *make* are not related to √μακ nor to each other, and English *maid* is at least problematical. Again on page 186, under "root πιθ, *bind*," besides the Greek and Latin words which properly belong there, are placed English "bind, bond, band, bundle," which, of course, belong together, but have nothing to do with √πιθ, and also English "body and bed" which are not related to the other words nor to each other. Other examples of inaccurate grouping are found on pages 211, 223, 262 (this is particularly bad), and 278. There are also in one or two places some unscientific explanations of form-change.

After adding that the lack of a table of contents and of an index seems to impair the usefulness of the book for ready reference, the possible fault-finding has been done. What is open to criticism is small in amount compared with what is good, and the book can be heartily recommended to teachers who wish to follow the method it represents.

George P. Bristol.

Cornell University.

Nature Study for Common Schools. By WILBUR S. JACKMAN, Teacher of Natural Science, Cook County Normal School, Chicago, Ill.; second edition revised. pp. 448. Henry Holt & Co.

Jackman's Nature Study is a manual for the trainers of children's minds rather than a treatise on the natural sciences. As an effort to make the study of science in our schools not only a training in observation and reasoning but also an inspiration toward further investigation, it should have the commendation of all who have begun to doubt the benefits derived from cramming the elementary facts of a science in order to remember seventy-five per cent. of them at a fixed and final hour. The book consists of a few introductory chapters upon the principles and methods of nature study, followed by a series of lessons, almost entirely in the form of questions, in zoology, botany, physics, chemistry, geography, geology and mineralogy.

The old lineal arrangement of the sciences is thought to confuse

their true relation and to develop children unsymmetrically; so its annihilation is sought by introducing them together. In the development of each individual branch of science, little or no attention is given to the systematic arrangement of the subject, the work being adapted to the seasons, or the natural inclination of the child. The questions are in nine parts, corresponding to the nine months of the school year, each month having its work in each of the seven sciences.

"The normal child himself will tell by his actions what things appeal earliest and most strongly to him, and will thus indicate to the teacher the lines along which it is best to guide him. The time has come for the teachers when 'a little child shall lead them.'"

The teacher gives out the work, selects the methods of expression, and gives any help or suggestions which are necessary to the full understanding of the topic. The pupils observe nature, make collections, perform experiments, and they must express the knowledge thus gained, not by words alone but also by painting, drawing, modeling or "making." They may, besides, have some reference reading to do. The character of the information brought out is of course not profound. Children's observations are naturally "all breadth and no depth," and the author follows nature.

The questions are fresh, interesting, and suggestive. In zoology and botany the life history of animals and plants is studied instead of analysis and classification, since "children are most deeply interested in objects through their functions." Physiology is treated under zoology. The following is a sample of how the author teaches rational hygiene. The skin is oiled—[by glands at the base of each hair]—and thus kept smooth and supple—cold water hardens oil—cold and water cause chapped skin—oil is a remedy for chapped hands. All this is developed by questions, except that in parenthesis. Physics offers a wide field for observation—many phenomena are studied in all of its departments; but the theories of light, heat, and the molecular nature of matter are untouched. Molecules and atoms are not mentioned in chemistry either, which is confined to familiarizing the pupils with a few common elements. In meteorology and astronomy, along with the rest of the work, careful records are kept of the meteorological and astronomical changes. The geography is almost entirely physical, and especially seeks to teach the relation between the natural conditions and the products of different localities. The division lines of the sciences are not emphasized, but their connection constantly revealed.

Though the general idea of Mr. Jackman's book is excellent, some of its features are certainly open to discussion. After making due allowance for the mind-training object of the study, the distortion which a science, as systematized knowledge, has to undergo, to be studied according to the seasons and the spontaneous inclinations of a supposably typical child's mind, might

overbalance the advantages gained. Pupils can hardly get any conception of the subject as a whole, or the relation of its parts, when their knowledge comes so haphazard; the aid to memory which system gives is lost. In physics, the first lesson is on the refraction of light and magnetism. These subjects interest children to be sure, but most children take a laudable satisfaction in taking up a subject in a logical, systematic way, though this may not be their own way.

"All breadth and no depth" may do very well for training observation, if the superficiality does not lead to wrong deductions. It is not depth but complexity, which bothers a child. Because self-observation is good, telling children what they cannot find out themselves will not necessarily lead to credulity, and may prevent shallow intellectual egotism. It is the teacher's task, by analogies and everything available, to make the difficult easy and the obscure plain.

Since a common school study of science is often the only study of it which our future citizen has, it is incumbent upon a course to teach them certain important facts as well as to train their faculties. The discussion of digestion and the organs concerned is an example of the omissions by the author, while a vast amount of unimportant information is being considered.

If these are weak points in Mr. Jackman's book, they do not vitiate its strong points. Mr. Jackman's scientific methods of training the pupils to observe, observe, observe, everywhere and anywhere, could be used with a more systematic arrangement of matter; and by increasing the information given by the teacher a more thorough and profound knowledge would be inculcated. In whatever way this book is used it can hardly fail to be of great value to any elementary science teacher by way of inspiration and suggestion.

E. F. Brown.

Chappaqua Mountain Institute.

Let Him First be a Man. By W. H. VENABLE, LL.D. Lee & Shepard. pp. 274.

"The wish to be of some service—even the slightest—to the vital cause of popular education:" this the author of the collection of essays with the above title states in his preface was the incentive to his work. The several essays treat of many topics connected with the teacher, the art of teaching, and the proper aim of popular education. Not the least suggestive of the wise and graceful thoughts, which flow from Dr. Venable's pen like a rill of Pieria, are addressed to the teacher. "The making of a child into a complete MAN is a process requiring time, skill, science, and wisdom." The plea of Rousseau for the youth undergoing his training: "Let him first be a man," echoes through this charming volume. "The whole object of the teacher should

be to train the *man;* not the artisan, the merchant, the professor. To train the whole man—not the hand alone, the head alone, the heart alone." Taking this high ground, the author deals with the larger details of the teaching art in a manner never falling short of eloquence and at times rising to the plane of inspiration. The educational problems of the day will approach solution when the teachers, upon whom, to a greater degree than they themselves realize, rests the burden of the solution, are inspired with the unselfish love of humanity evinced in the pages of this book. The more technical essays included under the general title, "Studies in the History of Education," form a convenient summary of the ancient ideals. "Unclassified Trifles" seem to be occasional thoughts of the author expressed in prose and dainty verse. These "trifles," which are far from trifling, give the reader a glimpse into a mind dwelling on things of deep import. "Some people," says our author, in epigrammatic vein, "practice their virtues so viciously that it is a pity they have virtues to abuse." "Books are called the tools of teachers. Teachers may become the tools of books." The volume closes with a tribute to William Downs Henkle, once prominent in educational affairs in Ohio. *De mortuis nil nisi bonum;* yet one who has read thus far with increasing enthusiasm must wish that this address had been omitted from the collection. A friend's estimate of his friend is of doubtful value or interest to the general reader.

Books upon education are abundant, most of them of the Dry-asdust pattern. The teacher is more than the method and popular education really educates just in proportion as common school teachers are influenced in their work by unselfish motives. To get their pupils "through" examinations, escape censure, and receive their pay, are not sufficient incentives to true teaching. Dr. Venable's words should fall like coals of fire upon the heads of hireling teachers; school committeemen and parents should ponder them. The material return to the teacher for the expenditure of his very life blood must in the nature of things be small in comparison with the prizes of other walks of life. He must consecrate himself to the work—a work not less difficult than any other and as holy as any. Ultimately the teachers must thus be chosen; for "business principles" cannot reach the subtle realm of influence, in which dwells *all* of the teacher's efficiency. Dr. Venable sounds the note which must find its corresponding chord in every thoughtful heart. When the ideal he portrays shall be realized, then, and not till then, will there be a profession of teaching.

J. Remsen Bishop.

Hughes High School.

The Study of Animal Life. By J. ARTHUR THOMSON, M.A., F.R.S.E. New York: Charles Scribner's Sons. 12 mo.; pp. 375.

This is a manual designed for teachers and students in University Extension Courses. It consists of a series of sketches, concerning the every day life of animals, their internal activities, their forms and structure, and finally, the theory of animal life, all carefully arranged so as to make a connected account. It is addressed to those who have little time or opportunity for the systematic study of zoology, but who have an interest in the life and habits of animals, and desire to appreciate these more thoroughly. Its chief object is, as stated by the author, "to give the student some impulse to joyousness of observation, and freedom of judgment, rather than to satisfy that thirst for knowledge which leads many to intellectual insobriety."

The plan of the work has been carried out in an admirable manner. It is written in a clear simple style; and at the same time, the view taken is from a thoroughly scientific standpoint; and what is especially satisfactory, the later results of science are embodied in it. Popular works are apt to lag a long way behind the van of science, but this one is both popular and abreast of modern thought.

The breadth of the scope of the work, and the narrow limits of its space have necessitated a brief discussion of each of the topics treated; but the book possesses all the merits of a vigorous and suggestive sketch. The reader is sure to feel a desire to read farther. How this desire may be gratified the author points out in an excellent appendix entitled, "Some of the Text Books on Animal Life."

Although this book is written especially for those engaged in University Extension work, its usefulness is not confined to this field; both teachers and students in schools and college classes will find it an exceedingly valuable complement to the ordinary text-book of zoology.

J. H. Comstock.

Cornell University.

American Literature, a Text Book for the Use of Schools and Colleges. By JULIAN HAWTHORNE and LEONARD LEMMON. Boston: D. C. Heath & Co. 1892.

This book, the critical parts of which are written mainly by one of America's shrewdest judges of what is delicate and true, especially in imaginative writing, is not at all like the average book of its class. Text-books for the use of schools are, as a rule, apt to be tedious, tasteless, and especially colorless. They are apt to be so cautious and conservative in their presentation of opinion and even of fact as to lose individuality, flavor and force. But Julian Hawthorne's book on American Literature is permeated by the author's thought and feeling and is alive on every

page, and throbbing with genuine interest in the subject presented. The author is himself a literary artist, the son of our most finished writer of prose fiction. He is also a refined critic, a book reviewer by profession, an indefatigable reader of the world's best books. The manual before us is a clear and succinct presentation of the history of American literature, and a sort of vivid picture gallery portraying the chief writers whom the country has thus far produced. The whole is comprised in about three hundred pages, beautifully printed and adorned by many cuts. The narrative portions of the book are lucid and lively, the critical parts penetrating and bold, sometimes destructive but never malignant, and though often severe never unkind, though perhaps not always just never dangerously misleading. In arraying his literary pictures for a new and original exposition for the benefit of the student, Mr. Hawthorne has rearranged the order of the portraits and he shows them in new lights, bringing out unexpected features and relative differences never so well exhibited before. He has taken down some statues from the higher pedestals on which we have been accustomed to see them, and has elevated others, following his independent judgment and taste. For example, Holmes and Whittier are awarded only medium rank among our poets, while Coates Kinney is deservedly recognized as one entitled to rank among the best of our singers. Emerson is placed at the top of our literature in both philosophy and poetry, and of Walt Whitman it is said, "His egotism is at least commensurate with his ignorance." The characterization of the genius and literary style of such leading writers as Irving, Bryant, Longfellow, Lowell, Poe, Motley and Bancroft seems to us exceedingly happy and discriminating. It is evident that the author has conscientiously studied the works of these writers and has, in an optimistic spirit, delineated them as he sees them, without fear and without favor. An entire chapter is devoted to the great Benjamin Franklin; and, with natural pride, an admiring son bestows a full chapter upon his illustrious father, Nathaniel Hawthorne.

Taken all in all, this vigorous little book may be freely commended to teachers, and students, and to the general reader. It cannot be read with indifference. It must provoke attention and comment. Whoever examines it will be aroused, both in his intellect and in his affections, and will be set to thinking comparing and judging for himself. The authors judicially say in an introductory page addressed to teachers, "This manual is intended to be, not an end in itself, but a means to an end. It is not to be regarded as a substitute for independent literary study. It is a method and a guide; did it attempt to be more, it would attempt too much. At the present day it is hardly necessary to remind teachers of this."

W. H. Venable.

Hughes High School.

Deutsche Volkslieder. A Selection from German Folk-songs. Edited with Introduction and Notes by HORATIO STEVENS WHITE. New York and London: G. P. Putnam's Sons.

This attractive little volume is meant to be a companion piece to Professor Crane's "Chansons Populaires de la France," and is intended to introduce the American student of German literature to that great treasure house of poetry, the "Volkslied."

As the growth and decay of popular poetry in Germany mirror in a remarkable way the evolution of German intellectual life, the thoroughness with which the history of the Volkslied is treated in the introduction to the volume before us, is much to be commended.

This introduction is remarkable not only for the clearness with which the facts are presented, but also for a beauty of language not often found in books of a scholarly nature. It is a pleasure to read such prose, and the value of it in a book which, we hope, will come into the hands of many young people cannot easily be overestimated.

Precisely because the decay of the Volkslied in Germany implied the existence of influences which tended towards artificiality in the life of the cultured, the revival of interest in folklore in the 18th century, brought about particularly by Herder, (see Erich Schmidt "Charakteristiken" p. 234 *et seq.* for Herder's predecessors in that field) was the best sign of a great change for the better in Germany. We are much pleased, therefore, to find a short history of this revival on pp. 284 *et seq.* A knowledge of that movement affords a valuable insight into the evolution of German intellectual life.

The poems in the book before us are selected with great taste and skill. No two people would, of course, pick out the same poems from the large mass that has come down to us, but it would be difficult to select an equal number of poems which would be more representative of the life of the German people as reflected in the Volkslied.

The notes are meant to explain textual difficulties, and to stimulate private investigation. In this they are remarkably successful. Throughout, and especially in the notes to the "Lied vom alten Hildebrant," to "Der Tannhaüser," to "Lohengrin, der Schwanenritter," to "Tell und sein Kind," we find valuable references to poems in German and in other literatures, dealing with the same or cognate subjects, and to many important works on the "Volkslied." These references betray a wide range of reading and a thorough acquaintance with folk-lore literature. This part of the book seems to us the most valuable, and will prove the most fruitful both in the class room and in the study. Teachers and students will feel grateful to Professor White for his stimulating method. It would be well if it were more generally adopted by commentators and editors, for it is only in this way that literary

products are brought before one in their relation to universal literature, and that the student is prevented from looking at them as isolated phenomena.

In the note on "None," p. 78, l. 7, that word might, in our opinion, be better explained as meaning "noon." It originally meant only the ninth hour, *i.e.*, three o'clock in the afternoon, but as it was later often loosely used to mean "noon," "wahrscheinlich wegen einer Verlegung der kanonischen None auf Mittag" (Grimm,) it might be so interpreted here, and then would more forcibly contrast with "Vesperzeit" in the next line. It might be mentioned that an attractive essay on the story of Tell appeared in the November number, 1890, of the *Atlantic Monthly*, entitled "The Legend of William Tell," by W. D. McCrackan. Is it quite sufficient to translate "Commers" simply by "a drinking bout, carousal," (note to No. 104, l. 13) without further explanation? A "Commers" is a most solemn performance, guided by strict rules,—a "carousal" has associations of rioting and disorder.

Professor White's book is a very welcome contribution to the American editions of German works. Everything has been done to make it attractive and valuable, and both teachers and students of German literature should avail themselves of this opportunity of becoming acquainted with the German "Volkslied,"—a part of German literature hitherto little known in America, although exceptionally valuable, both from a literary and an historical point of view.

C. von Klenze.

Cornell University.

CURRENT EDUCATIONAL LITERATURE.

CONDUCTED BY PRINCIPAL J. E. RUSSELL.

Religious Instruction in Public Schools. N. S. BURTON. The Andover Review. Jan.–Feb., 1893. pp. 33–45.

The true end of the public school is to educate the children of the country to be good citizens of the state and good members of society. The state must assume the training requisite to good citizenship, and must establish her own schools, and tax all for their support, on the same principle that she taxes for any other means of defense, because all are benefited. Immigration has put on the public school the added burden of training into good citizens, children of foreign-born parents. These children usually remain in school but a short time, and must be trained, if trained at all, at a very early age. Preparation for good citizenship demands both intellectual and moral training. All recognize the need of a moral element in the public school training of children, but a large number insist on excluding religious instruction. But can morality be inculcated if religion is excluded? As regards moral instruction, pupils may be taught in school that lying and stealing are wrong, yet to make this instruction effective at home is the real task. The school must offset home influences which are hostile to virtue. Honesty may bring rewards in school, and cheating, penalties; but what if the child finds this order reversed outside the schoolroom? "The coming citizen needs to be taught that there is an almighty and righteous Ruler of men who will render to every man according to his deeds; that under the government of such a Ruler it is inconceivable that wrong-doing should bring good to the wrong-doer." If the child is to be taught to prize the approval of instructors, why not teach him to desire the approval of a God who regards the right and good? If he is urged to cultivate a character which he himself can respect, why not offer him the only perfect character, Christ, as a model? Religious people believe that the safety of the government rests on the virtue and intelligence of its people, and that the future citizen must receive some kind of religious instruction. The state has a duty to those whose home influences are vicious, and she cannot trust to "voluntary agencies" to counteract the effect of such surroundings. The state assumes the training of these children for citizenship, but omits an essential part. While it is the duty of every parent to give religious instruction, still the state

must guard against possible neglect to do so. "So far as the well-being of the state requires it, the authority of the state is higher than that of the parent, and whatever the state needs for her safety, she has a right to do." Schools are necessary for the protection of the state, and the state cannot allow every parent to rule out whatever he does not want his child to learn. The state does not need to pass on the divine authorship of the Bible, "let the Bible take its place in the public schools on its own inherent character as a book suitable for training the future citizens of a free nation." "Let the state teach no religion," but "such religious truths as are necessary to make good citizens." A school board may abuse its power, and sectarian teaching may creep in, but "the possibility of such abuse does not invalidate the principle that the state has a right to give such instruction as will insure good subjects." "The state grants to each sect to teach such doctrines as it thinks essential to its existence. Shall she permit any sect to restrict her right to teach whatever is necessary to her own safety?" Subjection of the state to a sect, would be "the helpless bondage of the state to the church."

Lucy M. Barto.

The Head Masters' Conference. The Educational Review (London). January, 1893. pp. 131–156.

Last year the Head Masters' Conference assembled at Merchant Taylors' School, Charterhouse Square, on December 22 and 23. The principal discussion was on the subject of Higher Religious Education, the outcome of resolutions passed at a conference held last summer at Sion College under the presidency of the Archbishop of Canterbury. The chairman (Rev. Dr. Baker, head master of Merchant Taylors') in his opening address called attention to the growing feeling of anxiousness amongst churchmen at the very imperfect knowledge of religious subjects and at the very vague and loose opinions that are popularly held with regard even to the fundamental truths of the Christian religion. Instruction in church history and Bible lessons are regularly given in most schools, but there is a feeling that the instruction for boys of the Church of England should be more doctrinal. Our older, great public schools and grammar schools, and most of the great modern schools, were founded distinctly as nurseries for the Church of England. Even nonconformist patrons seldom object to their sons receiving definite teaching of religious subjects. The Rev. A. Lyttelton (Haileybury) was called upon. He thought it was a good principle that young minds should be left to form their own decisions upon questions of great and burning importance. But boys should be fairly equipped with the leading and cardinal facts which alone will enable them to form rational decisions. Surely it is important that they should know

something about the Church of England, seeing that they will probably all of them be called upon, before they are many years older, to vote upon the question of disestablishment. The minds of boys on these subjects are filled with error gathered from nursery maids and Calvinistic sources. The Rev. J. E. C. Welldon, head master of Harrow, followed. He said that the plan proposed would make a marked distinction between boys who are members of the Church of England and other boys. "Now, the principle upon which I will venture to take my stand is, that as public schoolmasters we should endeavor not to magnify, but, as far as we can consistently, to minimize the differences between the Church of England and other Christian bodies. And I take up that position because I believe that the public schools are the property, not of the church, but of the nation." To compel all boys to receive teaching in church history, as it commends itself to Churchmen, and in the Prayer Book and the Catechism, would be unfair. Let such teaching prevail as can be given without offence and without discrimination between boy and boy. The Rev. A. F. Rutty (St. John's School, Leatherhead) declared that what we want is to give our children definite dogmatic teaching, and, until we do that, the state of religious education must be unsatisfactory. Our Bishops should recognize the schoolmaster's office as a spiritual charge. The Rev. Dr. Fearon (Winchester) objected. He valued the importance of the schoolmaster's office, but he thought nothing could be gained by accentuating the differences between Christian bodies. Speeches were made by the head masters of Marlborough College, Felsted, King's School, and Bedford. It was apparent that no resolutions satisfactory to the Sion College Conference could be passed and the matter was referred to a committee to receive furthur communications. The next topic considered was the enjoyment of Scholarships by sons of wealthy parents. The discussion, which was spirited, made clear the bad policy now pursued. On motion of Dr. Percival (Rugby)the conference declared "That, whilst it is of primary importance that Scholarships should be awarded on grounds of intellectual merit, without reference to the pecuniary circumstances of the candidates, the emoluments, as distinct from the status of the scholarship, should not be enjoyed by the sons of the rich."

J. E. R.

Educational Institute of Scotland. Congress at Paisley. The Educational News (Edinburgh). Jan. 7, 1893. pp. 3–8.

Professor Young, of Glasgow University, presided and made the opening address. During the past fifty years many changes have been effected in the position and relations of teachers. But the teachers are not yet recognized as a part of the national staff. The state supports the legal and medical professions in the manage-

ment of their own affairs, and bars the unqualified from practising. But in education, the public, the pupils, and the teachers have no protection. In an ideal educational scheme, there should be a continuous gradation of schools from the lowest to the university. In Scotland the movement began in 1832, but there was no Department till 1846. In 1863 individual examinations took the place of class inspection. Later on, universities were allowed to certificate teachers, but the Act of 1870 ended this nineteenth century guildry. The universities have nothing to do with teachers, save to give them, as citizens who seek it, higher instruction, to ascertain that they are thoroughly educated, and so qualified for a degree, and thereby fit to enter on teaching or any other profession. Experience gained in the class-room, under an experienced teacher, is the best preparation ; after that has been gained and supplemented by courses on method, so that the young teacher may be accustomed to think, in place of working as a machine, as much university attendance may be added as possible. We are drifting towards more complete absorption by the state. Hitherto the state has certified the teacher, inspected, censured, and, on the approach of old age, ignored him,— a one-sided arrangement unknown in any other state department. Registration seems to me the central question. It is the strength of the medical profession, and were it placed in the hands of competent organizations, like the Institute and the Association of Secondary Schoolmasters, it would prove a boon to public and teachers. A grave difficulty confronts us in another way. The new Joint Board of Examiners is dominated by the Arts Faculties. It is autocratic, and there is no appeal from its decisions. Should such a commission control admission to degrees in medicine and science? The result already is confusion in the medical department. The standard has been raised recklessly and without consideration of the students. I hold that those most interested should be represented on the Joint Board ; it is correct in practice and right in theory.

Mr. J. G. Thompson, Neilson Institute, Paisley, then delivered an address on David Stow, "the foremost educationist that Scotland has produced since the great reformer, John Knox." Dr. Dickie read a paper on "The Superannuation of Teachers" in which he urged that inasmuch as teachers were public servants, the state should provide for them in old age. A paper on "Technical Education" was read by Mr. Caird, shipbuilder, Greenock. He advised technical training on the grounds of public economy. Other topics that engaged the congress were "Continuation and Evening Schools," "The Laws of Brain considered in relation to School Work" (Professor Calderwood, Edinburgh University), "The Position of Assistant Teachers," and "Secondary Education in Rural Schools."

J. E. R.

Notes on the Training of Secondary Teachers in Germany. J. J. FINDLAY. Journal of Education (London). February, 1893. pp. 87–89.

The Government of Saxe-Weimar has adopted at Jena the plan of a *Gymnasial-Seminar* possessing all the features essential to a complete program of secondary training. The students are placed under the charge of the head master of the Gymnasium for a practical introduction to secondary-school life; they work with him and his staff for a year, and become familiar with the specific character of gymnasial teaching. At the same time they are at work with Professor Rein in the University. They attend his lectures on Pedagogics, and work with the Professors of Philosophy also, if they have not studied ethics or psychology with sufficient care in earlier years. They teach some subject in the practising school, and follow the whole work of the University *Seminar*, in research and theory, as well as in criticism lessons. The lessons which are given in different classes in connection with training, are more effective than the rest, for the preparation for them is much more carefully and thoroughly made. The head-master and his staff are thus able thoroughly to equip those students who will presently form the younger part of their staff, according to their own methods. The principles which the long experience of Germany has deduced are:— (*a*) There are two organizations to which the charge of training secondary teachers can be entrusted—the university and the school. (*b*) The university favors the treatment of pedagogy as a *science;* it lays the foundations of the science in ethics (giving the aim of education), and in psychology (leading to the principles of method). It brings to the aid of the theory of instruction the ripest scholarship of the day in each department of study. The university forms an appropriate center for bringing the best work in pedagogics into association with theology and with medicine, both of which have responsibilities in relation to children. (*c*) The school favors the treatment of pedagogy as an *art;* it seeks to make the teacher in training an efficient workman; its strength lies in experience and skill rather than in science and method; above all, it brings him into direct contact with children. (*d*) Neither the university nor the school *alone* can give satisfactory training. If the university attempts training, it should have a practising school. If a school attempts to train its staff, theory, based upon philosophy, must precede or attend practice. (*e*) Training should cover the whole period of study after the intending teacher has left school. But the first portion of this period (for a degree, etc.), should be conducted apart from professional training proper. (*f*) This period of general study may well include an introduction to philosophy, this introduction being indispensable to teachers. (*g*) The private reading of books on pedagogy and philosophy is of value only as supplement-

ary to instruction; and a paper examination, as a test of efficiency, is only of value as a supplementary aid to other tests. Training is teaching. Neither lecturers nor text-books nor correspondence colleges supply an adequate substitute for it. (*h*) The universities and schools share the responsibility for initiatory training; until they move in the matter, and show by experiment both what is possible and what is desirable, no legislation can alter the existing situation. The state comes last.

George G. Brower.

Electives in the High School. E. J. GOODWIN. Educational Review (New York). February, 1893. pp. 142–152.

In 1886 the courses of study in the high school of the city of Newton, Mass., were reconstructed. The courses leading to college entrance were made to accord with the college entrance requirements. The general course received extraordinary consideration at the hands of the committee—men distinguished for sound learning and wide experience. They divided the subjects of study into three classes: prescribed studies, alternative studies, and electives. The prescribed studies are English, history, and the elements of physics and chemistry. The required courses in English and history comprise an exercise every day for four years; in science every pupil must have four exercises a week during the course. Twelve exercises a week are required as the minimum from each pupil. The difference must be made up from the electives offered. Latin and algebra come daily; in French and German, geometry, trigonometry, drawing, and book-keeping, recitations are held three times a week. Since the adoption of the course, complete statistics have been kept of its workings. Nearly one-third of the pupils are satisfied with the minimum requirements of twelve recitations a week, exclusive of elocution, calisthenics, and literary drill. The most difficult elective subjects are not the most attractive. Latin and mathematics meet the favor of the few, while French and drawing allure the many. Of the 39 per cent. electing Latin the first year, only 6 per cent. complete the course. In French 76 per cent. enter the work the second year, and 75 per cent. continue it for three years. Nearly one-half of the pupils elect drawing, while but 30 per cent. take algebra and 23 per cent. take plane geometry. The more numerous recitations in Latin and algebra deter many from entering those courses. The average number of recitations per week for those electing Latin is 17.7. The advantages arising from such a course are considerable. The emphasis put upon English, history, and science, has been productive of better methods and a higher grade of work. Better attention and more enthusiasm in class is secured by making the harder subjects elective. Mistakes made by the individual pupil in mark-

ing out his course, are easily rectified. The average length of school life is increased. The elective system encourages bright pupils to do their best, and "special students" are unknown.

J. E. R.

The Scotch Education Department. PRINCIPAL DONALDSON. Scottish Review. February, 1893. pp. 183–207.

In this account of the Scotch Education Department the writer does not profess to describe the "theoretic rights and duties" of its components, but rather to indicate the part which they actually perform in the administration of educational affairs. The Department is composed of the following members: (1) The President of the Privy Council, who is its nominal head. He does not necessarily know anything about Scotch education, nor manifest any interest in it. His duties are generally limited to the signing of an occasional document. (2) The Secretary for Scotland, who is supposed to have charge of the administration of education in Scotland. The other duties of his office, however, are too numerous to allow him to devote much attention to the subject. (3) A Privy Council of Education in Scotland. This is appointed by the Crown, but its duties are not defined, and it seldom meets. (4) The Education Office, at the head of which is the Permanent Secretary of the Education Department. To this officer, who is not responsible to Parliament, is entrusted almost entirely the administration of education. As he has charge of the distribution of grants of money to the public schools, the school boards are practically under his control. Hence it is in his power to determine the subjects of study and the methods of instruction. He controls the expenditure of school boards on buildings and teachers. The inspectors are chiefly appointed by him and are responsible to him. In short, nearly all the duties of the Education Department devolve upon him. The inadequacies of the Scotch system of education are mainly due to the fact that "the Permanent Secretary is entrusted with enormous powers as an executive officer, and that he has no legislative powers at all." In his own sphere his authority is practically unlimited, but beyond that he is helpless. This is the source of many evils. The governing bodies have full charge of the employment and dismissal of teachers, and, if they commit an injustice, there is no redress, except by appealing to the public. On the other hand, they have no power to bestow a retiring allowance upon a deserving teacher, nor is the Permanent Secretary able to give them the authority. The system of school examination is practically useless. The examiner merely reports to the Permanent Secretary, and neither affords the teacher any assistance by suggesting better methods of instruction, nor aids the governing bodies in improving their educational machinery. No attempt has been made to harmonize the different kinds of second-

ary schools, and to make them co-operate with each other. To show by contrast the defects of the Scotch system of education, a translation is given of the law relating to the organization of education in France. The Supreme Council, which has charge of the educational affairs of that country, contains representatives from all classes of teachers, from those of the university to those of the primary school. It is presided over by a Minister of Education, who is a member of the Cabinet, and is in touch with the educational interests of the country, having generally been a teacher himself. In conclusion the writer thinks that Scotland should have a "Minister of Education responsible to Parliament and the nation for the educational arrangements of the country," and that he should be assisted by "a consultative council containing representatives of every kind of educational institution, and embracing within it the best educational knowledge and experience of the country." She should not, however, simply imitate other nations, but adopt a system adapted to her own peculiar needs.

D. D. Hugh.

Experts in Education. LARKIN DUNTON. Education (Boston). February, 1893. pp. 327–335.

It is a strange anomaly that any man of learning, or any man who has received a majority of the votes of his town or city, is on this account considered competent to direct in all matters of education. The man who undertakes to prepare a course of study, even for the common schools, should know the aim and purpose of education; he should have a clear conception of the essentials of civilization, and of the knowledge, power, and habits which future citizens will need. He must be acquainted with the process of education; he must know all the activities, physical, intellectual, aesthetic and moral, which condition the child's progress. He must know the different classes of educators and the part that each is to perform in the work of education. He must be able to co-ordinate studies. He should discriminate nicely in educational values; he must distinguish between knowledge and the mental training involved. Not only do school committees formulate courses of study, but they assume the right to pass upon a teacher's fitness for his profession. With as much right might a lawyer examine a candidate for a medical degree. The sooner it comes to be understood in every city and town in this country that teachers are to be selected and appointed on account of professional knowledge and skill, and that they are then to be trusted as experts, the better it will be for the cause of education.

J. E. R.

BOOKS RECEIVED.

From Longmans, Green & Co. :

Longmans' School Composition, by David Salmon. pp. 305.

Longmans' Primary School Grammar, by David Salmon. New edition. pp. 124.

Longmans' School Grammar, by David Salmon. New edition revised. pp. 264.

Longmans' Summary of English History, from the earliest time, with ten maps and full genealogical tables. pp. 160.

Epochs of American History. Formation of the Union, 1750–1829, by Albert Bushnell Hart, Ph.D., Assistant Professor of History in Harvard University; member of the Massachusetts Historical Society; with five maps. Second edition, revised. pp. 278.

Epochs of American History. The Colonies, 1492–1750, by Reuben Goldthwaites, Secretary of the State Historical Society of Wisconsin; with four maps. Third edition, revised. pp. 301.

Macaulay's Milton, edited to illustrate the Laws of Rhetoric and Composition, by Alexander Mackie, M.A. pp. 179.

Milton's Comus; edited with Introduction and Notes by A. M. Williams, M.A., Lecturer in the Church of Scotland Training College, Aberdeen; late First Assistant in the Aberdeen High School for Girls. pp. 91.

The Merchant of Venice; edited with Introduction and Notes by H. C. Beeching, late Exhibitioner of Baliol College, Oxford, Rector of Vattendon. pp. 134.

Twelfth Night, or What You Will; edited with Introduction and Notes by H. Howard Crawley. pp. 134.

L'Allegro, Il Penseroso, and Lycidas, with Life of Milton. Introduction and Notes by Edward Storr, M.A., late Scholar of New College, Oxford, and of H. M. Indian Civil Service. pp. 61.

From Ginn & Co. :

Excavations of the American School of Athens at the Heraion of Argos, 1892, by Charles Waldstein, Litt.D., Ph.D., L.H.D., Director of the American School of Classical Studies, Athens. Price $3.15.

Chesterfield's Letters, abridged by Edwin Ginn, from edition of Charles Sayle, with Life, by M. F. Wheaton. pp. 116. Price 30 cents.

From D. Appleton & Co. (International Educational Series) :

Education from a National Standpoint, by Alfred Fouillée. Translated and edited, with a preface, by W. J. Greenstreet, M.A., Head Master of the Marling School, Stroud, with a preface by William T. Harris, A.M., LL.D., United States Commissioner of Education. pp. 327.

Rousseau's Émile, or Treatise on Education. Abridged, translated, and annotated by William H. Payne, Ph.D., LL.D., Chancellor of the University of Nashville and President of the Peabody Normal College. pp. 355.

From Henry Holt & Co.:

History of English Literature (Wyclif, Chaucer, Earliest Drama, Renaissance), by Bernhard Ten Brink. Translated from the German by Wm. Clarke Robinson, Ph.D., University Extension Lecturer; formerly Lecturer in Durham University, England. Translation revised by the author. Vol. II, Part 1. pp. 339. Price $2.00.

From Macmillan & Co.:

History of England. A Sketch of the Origin and Development of the English Language, with Examples, down to the present day, by A. C. Champneys, M.A., Assistant Master at Marlborough College. pp. 415. Price $1.25.

An Elementary Latin Grammar, by Henry John Roby, M.A., LL.D. and A. S. Wilkins, Litt.D., LL.D. pp. 167. Price 60 cents.

Logarithmic Tables, by Professor George William Jones, of Cornell University. Fourth edition. pp. 160. Price $1.00.

From Albert, Scott & Co.:

Cicero's Orations and Letters, by H. W. Johnston. Octavo, 798 pp., extra cloth, with a Separate Text of 327 pp. Price $1.25.

From the Interstate Publishing Co.:

Gilman's Historical Reader—No. I. The Discovery and Exploration of America; a book for American boys and girls, by Arthur Gilman, M.A. pp. 125.

Gilman's Historical Reader—No. II. The Colonization of America; a book for American boys and Girls, by Arthur Gilman, M.A. pp. 160.

Gilman's Historical Reader—No. III. The Making of the American Nation; a book for American boys and girls, by Arthur Gilman, M.A. pp. 190.

From American Book Co.:

French Reader on the Cumulative Method. The Story of Rodolphe and Coco, the Chimpanzee, with vocabulary, grammatical references, and synoptical tables, by Adolphe Dreyspring, Ph.D. pp. 171. Price 75 cents.

From Houghton, Mifflin & Co.:

The Riverside Literature Series. The Bunker Hill Monument; Adams and Jefferson; two Orations by Daniel Webster, with a biographical sketch and brief notes. pp. 87. Single numbers 15 cents. Yearly subscription (4 numbers) 50 cents.

From Leach, Shewell & Sanborn:

The Diamond Necklace, by Thomas Carlyle, edited with Introduction and Notes, by W. F. Mozier, Ottawa (Ill.) Township High School. pp. 170. Price 42 cents.

From B. Westermann & Co.:

Justus Perthes' Atlas Antiquus, Pocket-Atlas of the Ancient World, by Dr. Alb. van Kampen. Twenty-four copper-plate maps, colored, with Index.